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1

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THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC.

FOR THE YEAR

1857.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

WASHINGTON.
1854.

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1857 April 10
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PREFACE

TO THE FIRST VOLUME.

The preparation of this work was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation, its details, the values of the constants adopted, and the means employed in various parts of the work to secure additional accuracy or greater convenience, will be found in the article "On the Construction of the Ephemeris," contained in the Appendix to this volume.

An article "On the Arrangement and Use of the Tables" will also be found in this volume, to which the student is referred for instruction.

The theoretical department of the work has been placed under the special direction of Professor Benjamin Peirce, LL.D., and most of the calculations have passed under his final revision.

It is due to the memory of the late Nathaniel Bowditch, LL.D., the illustrious commentator of La Place, to say, that his zeal in enriching the library of the University at Cambridge, that of the American Academy of Arts and Sciences, and his private library, still preserved and accessible to students, with the best works in astronomical science, and his influence in promoting and diffusing in America a love for this branch of knowledge, have greatly facilitated the labor of preparing the American Ephemeris for publication in its present form.

CHARLES HENRY DAVIS,
Commander, U. S. Navy; Superintendent.

Cambridge, 1854.

ERRATUM

IN THE NAUTICAL PART OF THE EPHEMERIS FOR 1856.

Page 223, line 4th from bottom, in column of *Var. of Dec. for* 1 *hour*, for $66''.73$, read $61''.73$.

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ERRATA

IN THE FIRST EDITION OF THE EPHEMERIS FOR 1856.

Astronomical Part.

Page 296, nineteenth line, for $+0° 16' 28''.3$, read $—0°$, &c., putting the signs one place lower down.

" 314, 315, the *Sidereal Date* is to be diminished by one, from the third line from bottom of page 314, inclusive, to end of table.

" 317, eighteenth line, for ν^2 *Tauri*, read ν^1 *Tauri;* and nineteenth line, for $2^{h.}\ 8^{m.}$, read $4^{h.}\ 8^{m.}$.

" 320, third line, for γ *Virginis*, read η *Virginis*, in fourth column.

" 390, longitude in orbit ♄, for 101° 39′ 8″, read 101° 40′ 0″; longitude of ascending node ☿, for 14°, &c. read 46°, &c.; inclination ♄, for 2° 29′ 28″.1 read 2° 29′ 22″.4.

" 403, eleventh line, for $7^{h.}\ 4^{m.}\ 24^{s.}$, read $11^{h.}$, &c.; and fourteenth line, for $11^{h.}\ 33^{m.}\ 53^{s.}$, read $11^{h.}\ 32^{m.}\ 53^{s.}$

Appendix.

Page 39, seventh line from bottom, for $—17^{s.}.88$, read $—1^{s.}.79$, and correct the example accordingly.

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1857, WHICH COMPRISES THE LATTER PART OF THE 81ST AND THE BEGINNING OF THE 82D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

The year 6570 of the Julian Period; to the latter part of
" 5617 and the beginning of
" 5618 of the creation of the world, according to the Jews;
" 2610 since the foundation of Rome, according to Varro;
" 2604 of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding, according to the chronologists, to the 747th, and according to the astronomers, to the 746th year before the birth of Christ;
" 2633 of the Olympiads, or the first year of the 659th Olympiad, commencing in July, 1857, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period; to the latter part of
" 1273 and the beginning of
" 1274 (of twelve lunations) since the Hegira, or flight of Mahomet, which, as is generally supposed, took place on the 16th of July, in the year 622 of the Christian era; and, finally to
" 7365 – 6 of the Byzantine era.

The year 1273 of the Mohammedan era begins on the 1st of September, 1856, and ends on the 21st of August, 1857.

The year 5617 of the Jewish era begins on the 30th of September, 1856, and ends on the 18th of September, 1857.

The first day of January of the year 1857 is the 2,399.316th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	D	Solar Cycle	18
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Lunar Cycle or Golden Number	15	Julian Period	6570

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕ or ♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	1.	♈	Aries.	Autumn signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpio.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer signs.	4.	♋	Cancer.	Winter signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌ Conjunction, or having the same Longitude or Right Ascension.
□ Quadrature, or differing 90° in " " "
☍ Opposition, or differing 180° in " " "

ABBREVIATIONS.

☊	Ascending Node.	′	Minutes of Arc.
☋	Descending Node.	″	Seconds of Arc.
N.	North. S. South.	$^{\mathrm{h}}$	Hours.
E.	East. W. West.	$^{\mathrm{m}}$	Minutes of Time.
°	Degrees.	$^{\mathrm{s}}$	Seconds of Time.

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Thur.	1	18 48 18.59	11.035	S. 22 59 43.2	12.78	16 18.38	71.07	3 58.16	1.178
Fri.	2	18 52 43.45	11.022	22 54 23.2	13.88	16 18.37	71.02	4 26.35	1.165
Sat.	3	18 57 7.87	11.005	22 48 36.1	15.02	16 18.37	70.97	4 54.14	1.149
Sun.	4	19 1 31.86	10.987	22 42 21.9	16.14	16 18.37	70.92	5 21.50	1.131
Mon.	5	19 5 55.41	10.968	22 35 40.8	17.26	16 18.36	70.86	5 48.42	1.111
Tues.	6	19 10 18.48	10.948	22 28 32.9	18.37	16 18.34	70.79	6 14.85	1.091
Wed.	7	19 14 41.05	10.927	22 20 58.4	19.47	16 18.31	70.72	6 40.78	1.070
Thur.	8	19 19 3.10	10.904	22 12 57.7	20.56	16 18.28	70.65	7 6.21	1.048
Fri.	9	19 23 24.61	10.881	22 4 30.9	21.65	16 18.24	70.58	7 31.10	1.025
Sat.	10	19 27 45.55	10.858	21 55 38.1	22.72	16 18.20	70.51	7 55.42	1.001
Sun.	11	19 32 5.92	10.833	21 46 19.8	23.78	16 18.15	70.43	8 19.16	0.977
Mon.	12	19 36 25.69	10.807	21 36 36.2	24.83	16 18.09	70.35	8 42.31	0.951
Tues.	13	19 40 44.83	10.781	21 26 27.5	25.87	16 18.03	70.26	9 4.83	0.925
Wed.	14	19 45 3.33	10.755	21 15 54.0	26.90	16 17.96	70.17	9 26.71	0.898
Thur.	15	19 49 21.18	10.727	21 4 55.9	27.91	16 17.88	70.08	9 47.95	0.871
Fri.	16	19 53 38.37	10.699	20 53 33.7	28.90	16 17.80	69.98	10 8.52	0.843
Sat.	17	19 57 54.87	10.671	20 41 47.7	29.89	16 17.71	69.88	10 28.41	0.814
Sun.	18	20 2 10.67	10.641	20 29 38.1	30.87	16 17.62	69.78	10 47.60	0.785
Mon.	19	20 6 25.75	10.611	20 17 5.2	31.84	16 17.52	69.68	11 6.08	0.755
Tues.	20	20 10 40.11	10.581	20 4 9.2	32.79	16 17.42	69.58	11 23.83	0.724
Wed.	21	20 14 53.73	10.550	19 50 50.8	33.71	16 17.31	69.47	11 40.85	0.693
Thur.	22	20 19 6.59	10.518	19 37 10.3	34.63	16 17.20	69.36	11 57.12	0.662
Fri.	23	20 23 18.68	10.486	19 23 7.8	35.54	16 17.09	69.25	12 12.61	0.629
Sat.	24	20 27 29.99	10.453	19 8 43.5	36.43	16 16.98	69.14	12 27.31	0.596
Sun.	25	20 31 40.49	10.420	18 53 58.1	37.30	16 16.86	69.03	12 41.22	0.563
Mon.	26	20 35 50.18	10.386	18 38 52.3	38.15	16 16.74	68.92	12 54.32	0.529
Tues.	27	20 39 59.05	10.352	18 23 26.2	38.99	16 16.61	68.81	13 6.59	0.495
Wed.	28	20 44 7.10	10.317	18 7 40.1	39.81	16 16.48	68.70	13 18.04	0.461
Thur.	29	20 48 14.32	10.282	17 51 34.5	40.62	16 16.35	68.59	13 28.67	0.426
Fri.	30	20 52 20.71	10.247	17 35 9.9	41.41	16 16.22	68.47	13 38.48	0.391
Sat.	31	20 56 26.25	10.212	17 18 26.6	42.17	16 16.08	68.35	13 47.45	0.356
Sun.	32	21 0 30.93	10.177	S. 17 1 25.1	42.92	16 15.94	68.23	13 55.56	0.321

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S								Equation of Time, *to be subtracted from Mean Time.*		Diff. for 1 hour.	Sidereal Time.		
		Apparent Right Ascension.			Diff. for 1 hour.	*Apparent* Declination.			Diff. for 1 hour.						
		h.	m.	s.	s.	°	′	″	″	m.	s.	s.	h.	m.	s.
Thur.	1	18	48	17.90	11.085	S 22	59	43.7	12.74	3	58.08	1.178	18	44	19.80
Fri.	2	18	52	42.63	11.022	22	54	24.3	13.88	4	26.27	1.165	18	48	16.36
Sat.	3	18	57	6.97	11.005	22	48	37.4	15.02	4	54.05	1.149	18	52	12.92
Sun.	4	19	1	30.88	10.987	22	42	23.4	16.14	5	21.40	1.131	18	56	9.48
Mon.	5	19	5	54.35	10.968	22	35	42.5	17.26	5	48.31	1.111	19	0	6.04
Tues.	6	19	10	17.34	10.948	22	28	34.8	18.37	6	14.74	1.091	19	4	2.60
Wed.	7	19	14	39.83	10.927	22	21	0.5	19.47	6	40.67	1.070	19	7	59.16
Thur.	8	19	19	1.81	10.904	22	13	0.1	20.56	7	6.10	1.048	19	11	55.71
Fri.	9	19	23	23.25	10.881	22	4	33.6	21.65	7	30.98	1.025	19	15	52.27
Sat.	10	19	27	44.12	10.858	21	55	41.1	22.72	7	55.29	1.001	19	19	48.83
Sun.	11	19	32	4.42	10.833	21	46	23.1	23.78	8	19.03	0.977	19	23	45.39
Mon.	12	19	36	24.12	10.807	21	36	39.8	24.83	8	42.18	0.951	19	27	41.94
Tues.	13	19	40	43.20	10.781	21	26	31.4	25.87	9	4.70	0.925	19	31	38.50
Wed.	14	19	45	1.64	10.755	21	15	58.2	26.90	9	26.58	0.898	19	35	35.06
Thur.	15	19	49	19.43	10.727	21	5	0.5	27.91	9	47.81	0.871	19	39	31.62
Fri.	16	19	53	36.56	10.699	20	53	38.6	28.90	10	8.38	0.843	19	43	28.18
Sat.	17	19	57	53.01	10.671	20	41	52.9	29.89	10	28.27	0.814	19	47	24.74
Sun.	18	20	2	8.76	10.641	20	29	43.6	30.87	10	47.46	0.785	19	51	21.30
Mon.	19	20	6	23.79	10.611	20	17	11.0	31.84	11	5.94	0.755	19	55	17.85
Tues.	20	20	10	38.10	10.581	20	4	15.4	32.79	11	23.69	0.724	19	59	14.41
Wed.	21	20	14	51.68	10.550	19	50	57.3	33.71	11	40.71	0.693	20	3	10.97
Thur.	22	20	19	4.50	10.518	19	37	17.1	34.63	11	56.98	0.662	20	7	7.52
Fri.	23	20	23	16.55	10.486	19	23	14.9	35.54	12	12.47	0.629	20	11	4.08
Sat.	24	20	27	27.82	10.453	19	8	51.0	36.43	12	27.18	0.596	20	15	0.64
Sun.	25	20	31	38.29	10.420	18	54	6.0	37.30	12	41.10	0.563	20	18	57.19
Mon.	26	20	35	47.95	10.386	18	39	0.5	38.15	12	54.20	0.529	20	22	53.75
Tues.	27	20	39	56.79	10.352	18	23	34.7	38.99	13	6.48	0.495	20	26	50.31
Wed.	28	20	44	4.81	10.317	18	7	48.9	39.81	13	17.94	0.461	20	30	46.87
Thur.	29	20	48	12.01	10.282	17	51	43.6	40.62	13	28.58	0.426	20	34	43.43
Fri.	30	20	52	18.37	10.247	17	35	19.3	41.41	13	38.39	0.391	20	38	39.98
Sat.	31	20	56	23.90	10.212	17	18	36.3	42.17	13	47.36	0.356	20	42	36.54
Sun.	32	21	0	28.57	10.177	S.17	1	35.1	42.92	13	55.48	0.321	20	46	33.09

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h. m. s.
1	1	281 6 29.6	6 31.8	152.94	—0.09	9.9926625	0.7	5 14 48.49
2	2	282 7 39.9	7 42.0	152.93	+0.02	.9926621	0.3	5 10 52.55
3	3	283 8 49.7	8 51.8	152.91	0.16	.9926640	1.3	5 6 56.64
4	4	284 9 59.3	10 1.4	152.89	0.29	.9926682	2.2	5 3 0.73
5	5	285 11 8.4	11 10.2	152.87	0.41	.9926747	3.2	4 59 4.83
6	6	286 12 17.1	12 18.7	152.85	0.51	.9926838	4.3	4 55 8.92
7	7	287 13 25.4	13 26.8	152.83	0.60	.9926955	5.4	4 51 13.01
8	8	288 14 33.2	14 34.4	152.81	0.66	.9927099	6.5	4 47 17.10
9	9	289 15 40.6	15 41.6	152.80	0.68	.9927270	7.7	4 43 21.18
10	10	290 16 47.6	16 48.4	152.79	0.69	.9927469	8.9	4 39 25.27
11	11	291 17 54.3	17 54.9	152.77	0.66	.9927697	10.1	4 35 29.36
12	12	292 19 0.5	19 0.9	152.75	0.61	.9927954	11.3	4 31 33.45
13	13	293 20 6.4	20 6.6	152.74	0.51	.9928238	12.4	4 27 37.54
14	14	294 21 12.0	21 12.1	152.73	0.41	.9928549	13.5	4 23 41.62
15	15	295 22 17.3	22 17.2	152.71	0.28	.9928887	14.5	4 19 45.71
16	16	296 23 22.3	23 22.0	152.70	0.14	.9929250	15.6	4 15 49.80
17	17	297 24 27.0	24 26.5	152.68	+0.01	.9929637	16.6	4 11 53.89
18	18	298 25 31.3	25 30.6	152.67	—0.13	.9930045	17.4	4 7 57.98
19	19	299 26 35.3	26 34.4	152.66	0.24	.9930475	18.3	4 4 2.07
20	20	300 27 38.9	27 37.9	152.64	0.35	.9930924	19.1	4 0 6.15
21	21	301 28 42.0	28 40.8	152.62	0.42	.9931392	19.8	3 56 10.24
22	22	302 29 44.5	29 43.1	152.60	0.47	.9931877	20.6	3 52 14.33
23	23	303 30 46.6	30 44.9	152.57	0.50	.9932378	21.2	3 48 18.42
24	24	304 31 47.8	31 46.0	152.53	0.50	.9932895	21.8	3 44 22.51
25	25	305 32 48.2	32 46.3	152.49	0.46	.9933426	22.4	3 40 26.60
26	26	306 33 47.6	33 45.6	152.45	0.39	.9933971	23.0	3 36 30.69
27	27	307 34 46.0	34 43.9	152.41	0.31	.9934530	23.6	3 32 34.78
28	28	308 35 43.4	35 41.1	152.37	0.20	.9935104	24.2	3 28 38.87
29	29	309 36 39.6	36 37.1	152.32	—0.07	.9935693	24.8	3 24 42.96
30	30	310 37 34.6	37 31.9	152.27	+0.06	.9936298	25.5	3 20 47.04
31	31	311 38 28.2	38 25.3	152.21	0.19	.9936918	26.2	3 16 51.13
32	32	312 39 20.5	39 17.4	152.15	+0.31	9.9937557	27.0	3 12 55.22

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	16 0.5	16 2.9	58 38.5	+0.77	58 47.4	+0.70	4 32.9	1.96	5.1
2	16 5.1	16 7.0	58 55.4	0.63	59 2.6	0.56	5 19.8	1.96	6.1
3	16 8.7	16 10.2	59 8.9	0.48	59 14.2	0.40	6 7.1	2.01	7.1
4	16 11.4	16 12.2	59 18.4	0.30	59 21.4	+0.19	6 56.4	2.12	8.1
5	16 12.6	16 12.6	59 23.0	+0.06	59 22.9	−0.08	7 48.8	2.27	9.1
6	16 12.1	16 11.1	59 21.1	−0.23	59 17.5	0.39	8 45.2	2.43	10.1
7	16 9.5	16 7.4	59 11.8	0.56	59 4.0	0.73	9 45.4	2.55	11.1
8	16 4.7	16 1.4	58 54.0	0.92	58 42.0	1.09	10 47.5	2.58	12.1
9	15 57.6	15 53.3	58 28.0	1.24	58 12.1	1.39	11 49.0	2.49	13.1
10	15 48.6	15 43.5	57 54.7	1.50	57 36.0	1.60	12 47.1	2.32	14.1
11	15 38.1	15 32.6	57 16.4	1.66	56 56.2	1.69	13 40.4	2.12	15.1
12	15 27.1	15 21.6	56 35.7	1.69	56 15.5	1.66	14 28.8	1.93	16.1
13	15 16.2	15 11.1	55 55.9	1.60	55 37.1	1.51	15 13.1	1.78	17.1
14	15 6.3	15 2.0	55 19.7	1.39	55 3.8	1.24	15 54.5	1.69	18.1
15	14 58.2	14 55.0	54 49.8	1.07	54 37.9	0.89	16 34.3	1.65	19.1
16	14 52.4	14 50.5	54 28.3	0.70	54 21.2	0.49	17 13.5	1.65	20.1
17	14 49.2	14 48.6	54 16.6	−0.28	54 14.6	−0.06	17 53.6	1.71	21.1
18	14 48.8	14 49.7	54 15.2	+0.16	54 18.5	+0.38	18 35.6	1.81	22.1
19	14 51.3	14 53.6	54 24.4	0.58	54 32.8	0.80	19 20.5	1.95	23.1
20	14 56.5	15 0.1	54 43.6	0.99	54 56.7	1.17	20 9.2	2.11	24.1
21	15 4.2	15 8.8	55 11.8	1.33	55 28.6	1.47	21 1.7	2.25	25.1
22	15 13.8	15 19.1	55 47.0	1.58	56 6.5	1.66	21 57.5	2.36	26.1
23	15 24.6	15 30.2	56 26.8	1.71	56 47.5	1.73	22 54.8	2.38	27.1
24	15 35.9	15 41.5	57 8.3	1.71	57 28.6	1.66	23 51.8	2.33	28.1
25	15 46.8	15 51.8	57 48.2	1.58	58 6.7	1.47	☌		29.1
26	15 56.4	16 0.6	58 23.6	1.34	58 38.8	1.18	0 46.7	2.23	0.5
27	16 7.2	16 7.2	58 52.0	1.01	59 3.1	0.83	1 39.0	2.13	1.5
28	16 9.6	16 11.4	59 12.0	0.65	59 18.7	0.47	2 28.8	2.04	2.5
29	16 12.6	16 13.3	59 23.2	+0.29	59 25.6	+0.12	3 17.0	2.00	3.5
30	16 13.5	16 13.2	59 26.1	−0.03	59 24.8	−0.17	4 4.9	2.02	4.5
31	16 12.4	16 11.2	59 22.0	0.29	59 17.7	0.40	4 53.8	2.08	5.5
32	16 9.7	16 7.9	59 12.4	−0.49	59 5.9	−0.58	5 45.0	2.20	6.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	23 8 33.09	2.0740	S. 7 52 9.2	15.974	0	0 47 32.04	2.0852	N. 5 20 36.7	16.531
1	23 10 37.48	2.0722	7 36 9.5	16.016	1	0 49 37.22	2.0876	5 37 7.9	16.508
2	23 12 41.76	2.0705	7 20 7.3	16.057	2	0 51 42.55	2.0902	5 53 37.7	16.484
3	23 14 45.94	2.0688	7 4 2.6	16.098	3	0 53 48.04	2.0929	6 10 6.0	16.456
4	23 16 50.02	2.0672	6 47 55.5	16.138	4	0 55 53.70	2.0957	6 26 32.7	16.432
5	23 18 54.00	2.0656	6 31 46.0	16.177	5	0 57 59.53	2.0986	6 42 57.8	16.404
6	23 20 57.89	2.0642	6 15 34.2	16.214	6	1 0 5.53	2.1015	6 59 21.2	16.374
7	23 23 1.70	2.0629	5 59 20.3	16.249	7	1 2 11.71	2.1045	7 15 42.7	16.342
8	23 25 5.44	2.0617	5 43 4.3	16.283	8	1 4 18.07	2.1076	7 32 2.3	16.309
9	23 27 9.10	2.0605	5 26 46.3	16.316	9	1 6 24.62	2.1108	7 48 19.9	16.275
10	23 29 12.69	2.0593	5 10 26.4	16.347	10	1 8 31.37	2.1142	8 4 35.4	16.239
11	23 31 16.22	2.0583	4 54 4.6	16.377	11	1 10 38.32	2.1176	8 20 48.6	16.202
12	23 33 19.69	2.0574	4 37 41.1	16.406	12	1 12 45.48	2.1211	8 36 59.6	16.163
13	23 35 23.11	2.0566	4 21 15.9	16.434	13	1 14 52.85	2.1247	8 53 8.2	16.122
14	23 37 26.48	2.0558	4 4 49.0	16.461	14	1 17 0.44	2.1283	9 9 14.3	16.080
15	23 39 29.81	2.0552	3 48 20.6	16.486	15	1 19 8.25	2.1321	9 25 17.8	16.036
16	23 41 33.10	2.0546	3 31 50.7	16.509	16	1 21 16.29	2.1359	9 41 18.6	15.991
17	23 43 36.36	2.0541	3 15 19.5	16.531	17	1 23 24.56	2.1398	9 57 16.7	15.945
18	23 45 39.59	2.0537	2 58 47.0	16.552	18	1 25 33.07	2.1438	10 13 12.0	15.897
19	23 47 42.80	2.0534	2 42 13.3	16.571	19	1 27 41.82	2.1480	10 29 4.3	15.847
20	23 49 46.00	2.0532	2 25 38.5	16.589	20	1 29 50.82	2.1522	10 44 53.6	15.796
21	23 51 49.19	2.0532	2 9 2.6	16.606	21	1 32 0.08	2.1564	11 0 39.7	15.742
22	23 53 52.38	2.0532	1 52 25.8	16.621	22	1 34 9.59	2.1607	11 16 22.6	15.687
23	23 55 55.57	2.0532	S. 1 35 48.1	16.635	23	1 36 19.37	2.1652	N.11 32 2.2	15.631
FRIDAY 2.					SUNDAY 4.				
0	23 57 58.76	2.0533	S. 1 19 9.6	16.647	0	1 38 29.42	2.1697	N.11 47 38.4	15.573
1	0 0 1.96	2.0536	1 2 30.4	16.658	1	1 40 39.74	2.1742	12 3 11.0	15.513
2	0 2 5.18	2.0540	0 45 50.6	16.667	2	1 42 50.33	2.1788	12 18 40.0	15.452
3	0 4 8.43	2.0545	0 29 10.3	16.676	3	1 45 1.20	2.1836	12 34 5.3	15.390
4	0 6 11.72	2.0551	S. 0 12 29.5	16.683	4	1 47 12.36	2.1885	12 49 26.8	15.326
5	0 8 15.04	2.0557	N. 0 4 11.7	16.689	5	1 49 23.82	2.1934	13 4 44.4	15.260
6	0 10 18.40	2.0563	0 20 53.2	16.694	6	1 51 35.57	2.1983	13 19 58.0	15.192
7	0 12 21.80	2.0571	0 37 34.9	16.697	7	1 53 47.62	2.2034	13 35 7.5	15.124
8	0 14 25.25	2.0580	0 54 16.8	16.698	8	1 55 59.98	2.2086	13 50 12.9	15.054
9	0 16 28.76	2.0590	1 10 58.7	16.698	9	1 58 12.65	2.2137	14 5 14.0	14.981
10	0 18 32.33	2.0601	1 27 40.6	16.697	10	2 0 25.63	2.2189	14 20 10.6	14.906
11	0 20 35.97	2.0613	1 44 22.4	16.695	11	2 2 38.92	2.2242	14 35 2.7	14.830
12	0 22 39.69	2.0626	2 1 4.0	16.691	12	2 4 52.53	2.2296	14 49 50.2	14.752
13	0 24 43.48	2.0639	2 17 45.3	16.686	13	2 7 6.47	2.2351	15 4 33.0	14.673
14	0 26 47.36	2.0654	2 34 26.3	16.679	14	2 9 20.74	2.2406	15 19 11.0	14.592
15	0 28 51.33	2.0670	2 51 6.8	16.671	15	2 11 35.34	2.2462	15 33 44.1	14.510
16	0 30 55.40	2.0686	3 7 46.8	16.661	16	2 13 50.28	2.2518	15 48 12.2	14.425
17	0 32 59.57	2.0702	3 24 26.1	16.649	17	2 16 5.56	2.2575	16 2 35.1	14.339
18	0 35 3.83	2.0720	3 41 4.7	16.637	18	2 18 21.18	2.2633	16 16 52.9	14.252
19	0 37 8.21	2.0740	3 57 42.5	16.622	19	2 20 37.15	2.2691	16 31 5.4	14.162
20	0 39 12.71	2.0761	4 14 19.4	16.607	20	2 22 53.47	2.2749	16 45 12.4	14.071
21	0 41 17.34	2.0782	4 30 35.4	16.591	21	2 25 10.14	2.2808	16 59 13.9	13.978
22	0 43 22.10	2.0805	4 47 30.3	16.573	22	2 27 27.17	2.2865	17 13 9.8	13.883
23	0 45 27.00	2.0828	5 4 4.1	16.553	23	2 29 44.56	2.2928	17 26 59.9	13.787
24	0 47 32.04	2.0852	N. 5 20 36.7	16.531	24	2 32 2.31	2.2988	N.17 40 44.2	13.689

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					WEDNESDAY 7.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	2 32 2.31	2.2988	N.17 40 44.2	13.689	0	4 29 31.92	2.5852	N.26 12 15.0	7.002
1	2 34 20.42	2.3048	17 54 22.6	13.589	1	4 32 7.17	2.5897	26 19 9.9	6.825
2	2 36 38.89	2.3109	18 7 54.9	13.487	2	4 34 42.69	2.5942	26 25 54.1	6.647
3	2 38 57.73	2.3172	18 21 21.1	13.384	3	4 37 18.47	2.5985	26 32 27.6	6.469
4	2 41 16.95	2.3234	18 34 41.0	13.279	4	4 39 54.51	2.6027	26 38 50.4	6.290
5	2 43 36.54	2.3296	18 47 54.6	13.172	5	4 42 30.80	2.6067	26 45 2.5	6.111
6	2 45 56.50	2.3359	19 1 1.7	13.063	6	4 45 7.32	2.6105	26 51 3.8	5.930
7	2 48 16.84	2.3422	19 14 2.2	12.953	7	4 47 44.06	2.6142	26 56 54.1	5.747
8	2 50 37.56	2.3485	19 26 56.1	12.841	8	4 50 21.02	2.6177	27 2 33.4	5.563
9	2 52 58.66	2.3548	19 39 43.2	12.727	9	4 52 58.19	2.6211	27 8 1.7	5.379
10	2 55 20.14	2.3612	19 52 23.4	12.612	10	4 55 35.56	2.6244	27 13 19.0	5.194
11	2 57 42.00	2.3675	20 4 56.6	12.495	11	4 58 13.12	2.6276	27 18 25.1	5.008
12	3 0 4.24	2.3738	20 17 22.7	12.377	12	5 0 50.87	2.6306	27 23 20.0	4.821
13	3 2 26.86	2.3802	20 29 41.7	12.256	13	5 3 28.79	2.6333	27 28 3.7	4.634
14	3 4 49.87	2.3867	20 41 53.4	12.133	14	5 6 6.87	2.6360	27 32 36.1	4.447
15	3 7 13.27	2.3932	20 53 57.7	12.009	15	5 8 45.11	2.6386	27 36 57.3	4.258
16	3 9 37.05	2.3996	21 5 54.5	11.883	16	5 11 23.50	2.6410	27 41 7.1	4.068
17	3 12 1.22	2.4060	21 17 43.7	11.755	17	5 14 2.03	2.6432	27 45 5.5	3.877
18	3 14 25.77	2.4124	21 29 25.1	11.625	18	5 16 40.69	2.6452	27 48 52.4	3.687
19	3 16 50.71	2.4188	21 40 58.7	11.494	19	5 19 19.46	2.6470	27 52 27.9	3.496
20	3 19 16.03	2.4252	21 52 24.4	11.362	20	5 21 58.33	2.6487	27 55 51.9	3.305
21	3 21 41.73	2.4315	22 3 42.1	11.228	21	5 24 37.30	2.6502	27 59 4.5	3.113
22	3 24 7.81	2.4378	22 14 51.7	11.092	22	5 27 16.35	2.6515	28 2 5.5	2.920
23	3 26 34.27	2.4442	N.22 25 53.1	10.954	23	5 29 55.48	2.6527	N.28 4 54.9	2.727
	TUESDAY 6.					THURSDAY 8.			
0	3 29 1.11	2.4505	N.22 36 46.2	10.814	0	5 32 34.67	2.6536	N.28 7 32.7	2.534
1	3 31 28.33	2.4568	22 47 30.8	10.673	1	5 35 13.91	2.6543	28 9 59.0	2.341
2	3 33 55.93	2.4631	22 58 6.9	10.530	2	5 37 53.19	2.6549	28 12 13.7	2.147
3	3 36 23.91	2.4694	23 8 34.4	10.385	3	5 40 32.50	2.6553	28 14 16.7	1.953
4	3 38 52.26	2.4756	23 18 53.2	10.239	4	5 43 11.83	2.6556	28 16 8.1	1.760
5	3 41 20.98	2.4817	23 29 3.1	10.091	5	5 45 51.18	2.6558	28 17 47.9	1.566
6	3 43 50.06	2.4877	23 39 4.1	9.942	6	5 48 30.53	2.6557	28 19 16.0	1.372
7	3 46 19.50	2.4937	23 48 56.1	9.791	7	5 51 9.86	2.6553	28 20 32.5	1.178
8	3 48 49.30	2.4997	23 58 39.0	9.638	8	5 53 49.16	2.6548	28 21 37.4	0.985
9	3 51 19.46	2.5057	24 8 12.7	9.484	9	5 56 28.43	2.6541	28 22 30.7	0.792
10	3 53 49.98	2.5116	24 17 37.1	9.329	10	5 59 7.65	2.6532	28 23 12.4	0.598
11	3 56 20.85	2.5174	24 26 52.2	9.172	11	6 1 46.81	2.6521	28 23 42.5	0.404
12	3 58 52.06	2.5231	24 35 57.8	9.013	12	6 4 25.90	2.6508	28 24 0.9	0.211
13	4 1 23.62	2.5287	24 44 53.8	8.853	13	6 7 4.91	2.6493	28 24 7.8	0.018
14	4 3 55.51	2.5343	24 53 40.2	8.691	14	6 9 43.83	2.6477	28 24 3.1	0.174
15	4 6 27.74	2.5399	25 2 16.8	8.528	15	6 12 22.64	2.6459	28 23 46.9	0.366
16	4 9 0.30	2.5453	25 10 43.6	8.364	16	6 15 1.34	2.6440	28 23 19.2	0.557
17	4 11 33.18	2.5507	25 19 0.5	8.199	17	6 17 39.92	2.6419	28 22 40.0	0.749
18	4 14 6.38	2.5559	25 27 7.5	8.032	18	6 20 18.37	2.6396	28 21 49.3	0.940
19	4 16 39.89	2.5611	25 35 4.4	7.863	19	6 22 56.67	2.6370	28 20 47.2	1.131
20	4 19 13.71	2.5662	25 42 51.1	7.693	20	6 25 34.81	2.6342	28 19 33.6	1.321
21	4 21 47.83	2.5711	25 50 27.6	7.522	21	6 28 12.78	2.6313	28 18 8.6	1.510
22	4 24 22.24	2.5759	25 57 53.8	7.350	22	6 30 50.57	2.6283	28 16 32.3	1.698
23	4 26 56.94	2.5806	26 5 9.6	7.177	23	6 33 28.18	2.6251	28 14 44.8	1.885
24	4 29 31.92	2.5852	N.26 12 15.0	7.002	24	6 36 5.59	2.6217	N.28 12 46.1	2.072

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 36 5.59	2.6217	N.28 12 46.1	2.072
1	6 38 42.79	2.6182	28 10 36.2	2.258
2	6 41 19.78	2.6146	28 8 15.1	2.443
3	6 43 56.54	2.6107	28 5 42.9	2.628
4	6 46 33.06	2.6066	28 2 59.7	2.812
5	6 49 9.33	2.6023	28 0 5.5	2.995
6	6 51 45.34	2.5980	27 57 0.4	3.176
7	6 54 21.09	2.5935	27 53 44.4	3.357
8	6 56 56.56	2.5887	27 50 17.6	3.536
9	6 59 31.74	2.5839	27 46 40.1	3.713
10	● 7 2 6.63	2.5789	27 42 52.0	3.890
11	7 4 41.21	2.5738	27 38 53.3	4.067
12	7 7 15.49	2.5686	27 34 44.0	4.242
13	7 9 49.45	2.5632	27 30 24.3	4.415
14	7 12 23.08	2.5577	27 25 54.2	4.588
15	7 14 51.37	2.5520	27 21 13.7	4.759
16	7 17 29.32	2.5462	27 16 23.0	4.929
17	7 20 1.92	2.5403	27 11 22.2	5.097
18	7 22 34.16	2.5343	27 6 11.3	5.265
19	7 25 6.04	2.5281	27 0 50.4	5.431
20	7 27 37.54	2.5218	26 55 19.6	5.596
21	7 30 8.66	2.5155	26 49 38.9	5.759
22	7 32 39.40	2.5092	26 43 48.5	5.920
23	7 35 9.76	2.5027	N.26 37 48.5	6.080

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 37 39.72	2.4959	N.26 31 38.9	6.238
1	7 40 9.27	2.4891	26 25 19.9	6.395
2	7 42 38.41	2.4822	26 18 51.5	6.551
3	7 45 7.14	2.4753	26 12 13.7	6.706
4	7 47 35.45	2.4683	26 5 26.7	6.858
5	7 50 3.34	2.4612	25 58 30.7	7.009
6	7 52 30.80	2.4540	25 51 25.6	7.158
7	7 54 57.83	2.4468	25 44 11.6	7.306
8	7 57 24.42	2.4396	25 36 48.8	7.452
9	7 59 50.58	2.4322	25 29 17.3	7.597
10	8 2 16.29	2.4247	25 21 37.1	7.741
11	8 4 41.55	2.4172	25 13 48.4	7.882
12	8 7 6.36	2.4097	25 5 51.3	8.022
13	8 9 30.72	2.4021	24 57 45.8	8.160
14	8 11 54.62	2.3945	24 49 32.1	8.296
15	8 14 18.06	2.3868	24 41 10.3	8.430
16	8 16 41.04	2.3792	24 32 40.5	8.563
17	8 19 3.56	2.3714	24 24 2.7	8.694
18	8 21 25.61	2.3636	24 15 17.1	8.824
19	8 23 47.19	2.3557	24 6 23.8	8.952
20	8 26 8.30	2.3479	23 57 22.9	9.078
21	8 28 28.94	2.3401	23 48 14.4	9.203
22	8 30 49.11	2.3322	23 38 58.5	9.326
23	8 33 8.81	2.3244	23 29 35.3	9.447
24	8 35 28.04	2.3166	N.23 20 4.9	9.566

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 35 28.04	2.3166	N.23 20 4.9	9.566
1	8 37 46.80	2.3087	23 10 27.4	9.683
2	8 40 5.08	2.3007	23 0 42.9	9.799
3	8 42 22.88	2.2927	22 50 51.5	9.913
4	8 44 40.20	2.2848	22 40 53.3	10.026
5	8 46 57.05	2.2769	22 30 48.4	10.137
6	8 49 13.43	2.2690	22 20 36.9	10.247
7	8 51 29.33	2.2611	22 10 18.8	10.356
8	8 53 44.76	2.2532	21 59 54.3	10.461
9	8 55 59.71	2.2453	21 49 23.5	10.565
10	8 58 14.19	2.2374	21 38 46.5	10.667
11	9 0 28.20	2.2296	21 28 3.4	10.767
12	9 2 41.74	2.2217	21 17 14.3	10.866
13	9 4 54.81	2.2139	21 6 19.4	10.963
14	9 7 7.41	2.2061	20 55 18.7	11.059
15	9 9 19.54	2.1984	20 44 12.3	11.154
16	9 11 31.21	2.1907	20 33 0.2	11.247
17	9 13 42.42	2.1831	20 21 42.6	11.338
18	9 15 53.18	2.1755	20 10 19.6	11.427
19	9 18 3.48	2.1678	19 58 51.3	11.515
20	9 20 13.32	2.1602	19 47 17.8	11.601
21	9 22 22.70	2.1527	19 35 39.2	11.685
22	9 24 31.63	2.1452	19 23 55.6	11.768
23	9 26 40.12	2.1377	N.19 12 7.0	11.850

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 28 48.16	2.1303	N.19 0 13.5	11.930
1	9 30 55.76	2.1230	18 48 15.3	12.008
2	9 33 2.92	2.1157	18 36 12.5	12.084
3	9 35 9.64	2.1084	18 24 5.2	12.159
4	9 37 15.93	2.1012	18 11 53.4	12.233
5	9 39 21.79	2.0941	17 59 37.2	12.306
6	9 41 27.22	2.0870	17 47 16.7	12.377
7	9 43 32.23	2.0800	17 34 52.0	12.446
8	9 45 36.82	2.0730	17 22 23.2	12.514
9	9 47 40.99	2.0661	17 9 50.3	12.581
10	9 49 44.75	2.0592	16 57 13.4	12.647
11	9 51 48.10	2.0524	16 44 32.7	12.710
12	9 53 51.04	2.0457	16 31 48.2	12.772
13	9 55 53.58	2.0390	16 19 0.1	12.832
14	9 57 55.72	2.0324	16 6 8.4	12.891
15	9 59 57.47	2.0259	15 53 13.1	12.950
16	10 1 58.83	2.0194	15 40 14.3	13.007
17	10 3 59.80	2.0130	15 27 12.2	13.063
18	10 6 0.39	2.0067	15 14 6.8	13.117
19	10 8 0.60	2.0004	15 0 58.2	13.169
20	10 10 0.44	1.9942	14 47 46.5	13.220
21	10 11 59.91	1.9881	14 34 31.8	13.270
22	10 13 59.01	1.9820	14 21 14.1	13.319
23	10 15 57.75	1.9760	14 7 53.5	13.367
24	10 17 56.13	1.9700	N.13 54 30.1	13.413

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 17 56.13	1.9700	N.13 54 30.1	13.413
1	10 19 54.16	1.9642	13 41 3.9	13.458
2	10 21 51.84	1.9585	13 27 35.1	13.502
3	10 23 49.19	1.9529	13 14 3.7	13.544
4	10 25 46.20	1.9473	13 0 29.8	13.585
5	10 27 42.87	1.9417	12 46 53.5	13.626
6	10 29 39.21	1.9363	12 33 14.7	13.665
7	10 31 35.23	1.9310	12 19 33.6	13.702
8	10 33 30.93	1.9257	12 5 50.3	13.739
9	10 35 26.31	1.9204	11 52 4.9	13.775
10	10 37 21.38	1.9152	11 38 17.3	13.810
11	10 39 16.14	1.9102	11 24 27.7	13.843
12	10 41 10.60	1.9052	11 10 36.1	13.876
13	10 43 4.77	1.9004	10 56 42.6	13.907
14	10 44 58.65	1.8956	10 42 47.3	13.937
15	10 46 52.24	1.8908	10 28 50.2	13.966
16	10 48 45.55	1.8862	10 14 51.4	13.994
17	10 50 38.58	1.8816	10 0 51.0	14.021
18	10 52 31.34	1.8771	9 46 48.9	14.047
19	10 54 23.83	1.8726	9 32 45.3	14.072
20	10 56 16.05	1.8682	9 18 40.3	14.095
21	10 58 8.01	1.8640	9 4 33.9	14.118
22	10 59 59.73	1.8598	8 50 26.1	14.140
23	11 1 51.20	1.8557	N. 8 36 17.1	14.160

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 3 42.42	1.8517	N 8 22 6.9	14.180
1	11 5 33.40	1.8478	8 7 55.5	14.200
2	11 7 24.15	1.8440	7 53 42.9	14.218
3	11 9 14.68	1.8402	7 39 29.3	14.235
4	11 11 4.98	1.8365	7 25 14.7	14.251
5	11 12 55.06	1.8329	7 10 59.1	14.267
6	11 14 44.93	1.8294	6 56 42.6	14.282
7	11 16 34.59	1.8260	6 42 25.3	14.295
8	11 18 24.05	1.8226	6 28 7.3	14.307
9	11 20 13.30	1.8193	6 13 48.5	14.318
10	11 22 2.36	1.8161	5 59 29.1	14.329
11	11 23 51.23	1.8130	5 45 9.0	14.340
12	11 25 39.92	1.8100	5 30 48.3	14.349
13	11 27 28.43	1.8071	5 16 27.1	14.357
14	11 29 16.77	1.8042	5 2 5.4	14.364
15	11 31 4.93	1.8014	4 47 43.3	14.371
16	11 32 52.93	1.7987	4 33 20.8	14.377
17	11 34 40.77	1.7961	4 18 58.0	14.382
18	11 36 28.46	1.7936	4 4 35.0	14.386
19	11 38 16.00	1.7912	3 50 11.7	14.390
20	11 40 3.40	1.7888	3 35 48.2	14.392
21	11 41 50.66	1.7865	3 21 24.6	14.394
22	11 43 37.78	1.7842	3 7 0.9	14.395
23	11 45 24.77	1.7821	2 52 37.2	14.396
24	11 47 11.63	1.7800	N. 2 38 13.4	14.396

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	11 47 11.63	1.7800	N. 2 38 13.4	14.396
1	11 48 58.37	1.7781	2 23 49.7	14.394
2	11 50 45.00	1.7762	2 9 26.1	14.391
3	11 52 31.52	1.7744	1 55 2.7	14.388
4	11 54 17.93	1.7727	1 40 39.5	14.385
5	11 56 4.24	1.7711	1 26 16.5	14.381
6	11 57 50.46	1.7695	1 11 53.7	14.377
7	11 59 36.58	1.7680	0 57 31.2	14.372
8	12 1 22.62	1.7666	0 43 9.1	14.365
9	12 3 8.58	1.7653	0 28 47.5	14.357
10	12 4 54.46	1.7641	0 14 26.3	14.349
11	12 6 40.27	1.7629	N. 0 0 5.6	14.341
12	12 8 26.01	1.7618	S. 0 14 14.6	14.332
13	12 10 11.69	1.7608	0 28 34.2	14.322
14	12 11 57.31	1.7599	0 42 53.2	14.312
15	12 13 42.88	1.7591	0 57 11.6	14.301
16	12 15 28.40	1.7583	1 11 29.3	14.288
17	12 17 13.88	1.7577	1 25 46.2	14.275
18	12 18 59.32	1.7571	1 40 2.3	14.262
19	12 20 44.73	1.7566	1 54 17.6	14.248
20	12 22 30.11	1.7562	2 8 32.1	14.233
21	12 24 15.47	1.7559	2 22 45.7	14.218
22	12 26 0.81	1.7556	2 36 58.3	14.202
23	12 27 46.14	1.7554	S. 2 51 9.9	14.185

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 29 31.46	1.7552	S. 3 5 20.5	14.168
1	12 31 16.77	1.7552	3 19 30.1	14.151
2	12 33 2.08	1.7552	3 33 38.7	14.133
3	12 34 47.39	1.7553	3 47 46.1	14.113
4	12 36 32.71	1.7555	4 1 52.3	14.093
5	12 38 18.05	1.7558	4 15 57.3	14.072
6	12 40 3.41	1.7562	4 30 1.0	14.051
7	12 41 48.79	1.7566	4 44 3.4	14.029
8	12 43 34.20	1.7571	4 58 4.5	14.007
9	12 45 19.64	1.7577	5 12 4.3	13.985
10	12 47 5.12	1.7584	5 26 2.7	13.961
11	12 48 50.65	1.7591	5 39 59.6	13.936
12	12 50 36.22	1.7599	5 53 55.0	13.911
13	12 52 21.84	1.7608	6 7 48.9	13.885
14	12 54 7.52	1.7618	6 21 41.2	13.859
15	12 55 53.26	1.7629	6 35 31.9	13.832
16	12 57 39.07	1.7640	6 49 21.0	13.804
17	12 59 24.95	1.7652	7 3 8.4	13.776
18	13 1 10.90	1.7665	7 16 54.1	13.747
19	13 2 56.93	1.7679	7 30 38.0	13.717
20	13 4 43.05	1.7694	7 44 20.1	13.687
21	13 6 29.26	1.7709	7 58 0.4	13.656
22	13 8 15.56	1.7724	8 11 38.8	13.624
23	13 10 1.95	1.7740	8 25 15.2	13.591
24	13 11 48.44	1.7757	S. 8 38 49.7	13.558

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	13 11 48.44	1.7757	S. 8 38 49.7	13.558
1	13 13 35.04	1.7776	8 52 22.2	13.524
2	13 15 21.75	1.7795	9 5 52.6	13.490
3	13 17 8.58	1.7815	9 19 21.0	13.455
4	13 18 55.53	1.7835	9 32 47.3	13.419
5	13 20 42.60	1.7856	9 46 11.4	13.383
6	13 22 29.80	1.7878	9 59 33.3	13.347
7	13 24 17.14	1.7901	10 12 53.0	13.309
8	13 26 4.62	1.7925	10 26 10.4	13.271
9	13 27 52.24	1.7949	10 39 25.5	13.232
10	13 29 40.01	1.7974	10 52 38.2	13.192
11	13 31 27.93	1.7999	11 5 48.5	13.152
12	13 33 16.00	1.8025	11 18 56.4	13.111
13	13 35 4.23	1.8052	11 32 1.8	13.069
14	13 36 52.63	1.8080	11 45 4.7	13.027
15	13 38 41.20	1.8109	11 58 5.0	12.984
16	13 40 29.94	1.8138	12 11 2.7	12.939
17	13 42 18.86	1.8168	12 23 57.7	12.894
18	13 44 7.96	1.8199	12 36 50.0	12.849
19	13 45 57.25	1.8230	12 49 39.6	12.803
20	13 47 46.73	1.8262	13 2 26.4	12.755
21	13 49 36.40	1.8295	13 15 10.3	12.707
22	13 51 26.27	1.8329	13 27 51.3	12.659
23	13 53 16.35	1.8363	S.13 40 29.4	12.611

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 55 6.63	1.8397	S.13 53 4.6	12.562
1	13 56 57.12	1.8433	14 5 36.8	12.511
2	13 58 47.83	1.8470	14 18 5.9	12.459
3	14 0 38.76	1.8507	14 30 31.8	12.406
4	14 2 29.91	1.8544	14 42 54.6	12.353
5	14 4 21.29	1.8583	14 55 14.2	12.300
6	14 6 12.91	1.8622	15 7 30.6	12.246
7	14 8 4.76	1.8662	15 19 43.7	12.190
8	14 9 56.85	1.8702	15 31 53.4	12.134
9	14 11 49.19	1.8743	15 43 59.8	12.077
10	14 13 41.77	1.8785	15 56 2.7	12.019
11	14 15 34.61	1.8827	16 8 2.1	11.961
12	14 17 27.70	1.8870	16 19 58.0	11.902
13	14 19 21.05	1.8914	16 31 50.3	11.841
14	14 21 14.67	1.8958	16 43 38.9	11.780
15	14 23 8.55	1.9003	16 55 23.9	11.718
16	14 25 2.70	1.9048	17 7 5.1	11.655
17	14 26 57.13	1.9094	17 18 42.5	11.592
18	14 28 51.83	1.9140	17 30 16.1	11.527
19	14 30 46.81	1.9188	17 41 45.8	11.462
20	14 32 42.08	1.9237	17 53 11.5	11.395
21	14 34 37.65	1.9286	18 4 33.2	11.328
22	14 36 33.51	1.9334	18 15 50.9	11.261
23	14 38 29.66	1.9383	18 27 4.5	11.192
24	14 40 26.11	1.9433	S.18 38 13.9	11.122

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 40 26.11	1.9433	S.18 38 13.9	11.122
1	14 42 22.86	1.9484	18 49 19.1	11.051
2	14 44 19.92	1.9536	19 0 20.0	10.978
3	14 46 17.29	1.9588	19 11 16.5	10.905
4	14 48 14.97	1.9640	19 22 8.6	10.832
5	14 50 12.97	1.9692	19 32 56.3	10.757
6	14 52 11.28	1.9745	19 43 39.5	10.682
7	14 54 9.91	1.9799	19 54 18.1	10.605
8	14 56 8.87	1.9853	20 4 52.1	10.528
9	14 58 8.15	1.9908	20 15 21.4	10.449
10	15 0 7.76	1.9963	20 25 45.9	10.368
11	15 2 7.71	2.0019	20 36 5.6	10.287
12	15 4 7.99	2.0075	20 46 20.5	10.206
13	15 6 8.61	2.0132	20 56 30.6	10.124
14	15 8 9.57	2.0189	21 6 35.6	10.041
15	15 10 10.88	2.0247	21 16 35.5	9.956
16	15 12 12.53	2.0304	21 26 30.3	9.871
17	15 14 14.53	2.0362	21 36 20.0	9.785
18	15 16 16.87	2.0419	21 46 4.5	9.697
19	15 18 19.56	2.0477	21 55 43.7	9.608
20	15 20 22.60	2.0537	22 5 17.5	9.518
21	15 22 26.00	2.0597	22 14 45.9	9.427
22	15 24 29.76	2.0657	22 24 8.8	9.336
23	15 26 33.88	2.0717	S.22 33 26.2	9.243

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 28 38.36	2.0777	S.22 42 38.0	9.149
1	15 30 43.20	2.0837	22 51 44.1	9.054
2	15 32 48.41	2.0897	23 0 44.5	8.958
3	15 34 53.98	2.0958	23 9 39.1	8.861
4	15 36 59.92	2.1021	23 18 27.8	8.762
5	15 39 6.23	2.1082	23 27 10.5	8.662
6	15 41 12.90	2.1143	23 35 47.3	8.562
7	15 43 19.94	2.1205	23 44 18.0	8.460
8	15 45 27.36	2.1267	23 52 42.5	8.357
9	15 47 35.15	2.1329	24 1 0.8	8.252
10	15 49 43.31	2.1391	24 9 12.8	8.147
11	15 51 51.84	2.1453	24 17 18.4	8.041
12	15 54 0.75	2.1516	24 25 17.7	7.934
13	15 56 10.03	2.1578	24 33 10.5	7.825
14	15 58 19.68	2.1640	24 40 56.7	7.715
15	16 0 29.71	2.1702	24 48 36.3	7.604
16	16 2 40.11	2.1764	24 56 9.2	7.492
17	16 4 50.88	2.1826	25 3 35.3	7.379
18	16 7 2.02	2.1888	25 10 54.7	7.265
19	16 9 13.54	2.1950	25 18 7.2	7.149
20	16 11 25.43	2.2012	25 25 12.7	7.032
21	16 13 37.68	2.2073	25 32 11.1	6.914
22	16 15 50.30	2.2134	25 39 2.4	6.796
23	16 18 3.29	2.2196	25 45 46.6	6.677
24	16 20 16.65	2.2257	S.25 52 23.6	6.556

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 20 16.65	2.2257	S.25 52 23.6	6.556
1	16 22 30.38	2.2319	25 58 53.3	6.433
2	16 24 44.48	2.2380	26 5 15.6	6.309
3	16 26 58.94	2.2440	26 11 30.4	6.184
4	16 29 13.76	2.2500	26 17 37.7	6.059
5	16 31 28.94	2.2560	26 23 37.5	5.932
6	16 33 44.48	2.2619	26 29 29.6	5.804
7	16 36 0.37	2.2677	26 35 14.0	5.675
8	16 38 16.61	2.2736	26 40 50.6	5.545
9	16 40 33.20	2.2794	26 46 19.4	5.414
10	16 42 50.14	2.2852	26 51 40.3	5.281
11	16 45 7.43	2.2909	26 56 53.2	5.147
12	16 47 25.06	2.2966	27 1 58.0	5.012
13	16 49 43.03	2.3022	27 6 54.7	4.877
14	16 52 1.33	2.3077	27 11 43.3	4.740
15	16 54 19.96	2.3132	27 16 23.6	4.602
16	16 56 38.92	2.3187	27 20 55.6	4.464
17	16 58 58.21	2.3242	27 25 19.3	4.324
18	17 1 17.83	2.3296	27 29 34.5	4.183
19	17 3 37.77	2.3349	27 33 41.2	4.041
20	17 5 58.02	2.3400	27 37 39.4	3.897
21	17 8 18.57	2.3451	27 41 28.9	3.752
22	17 10 39.43	2.3502	27 45 9.7	3.607
23	17 13 0.59	2.3551	S.27 48 41.8	3.462

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 15 22.04	2.3599	S.27 52 5.2	3.315
1	17 17 43.78	2.3647	27 55 19.7	3.167
2	17 20 5.81	2.3695	27 58 25.2	3.017
3	17 22 28.13	2.3742	28 1 21.8	2.867
4	17 24 50.72	2.3787	28 4 9.4	2.717
5	17 27 13.58	2.3832	28 6 47.9	2.566
6	17 29 36.70	2.3875	28 9 17.2	2.413
7	17 32 0.08	2.3917	28 11 37.3	2.259
8	17 34 23.71	2.3959	28 13 48.2	2.104
9	17 36 47.59	2.4000	28 15 49.8	1.949
10	17 39 11.71	2.4039	28 17 42.1	1.794
11	17 41 36.06	2.4078	28 19 25.1	1.638
12	17 44 0.65	2.4116	28 20 58.7	1.480
13	17 46 25.46	2.4152	28 22 22.8	1.322
14	17 48 50.48	2.4187	28 23 37.4	1.163
15	17 51 15.71	2.4222	28 24 42.4	1.003
16	17 53 41.15	2.4255	28 25 37.8	0.843
17	17 56 6.78	2.4287	28 26 23.6	0.682
18	17 58 32.60	2.4318	28 26 59.7	0.520
19	18 0 58.60	2.4348	28 27 26.1	0.358
20	18 3 24.77	2.4377	28 27 42.7	0.195
21	18 5 51.12	2.4405	28 27 49.5	0.032
22	18 8 17.63	2.4431	28 27 46.5	0.132
23	18 10 44.29	2.4455	28 27 33.7	0.296
24	18 13 11.09	2.4478	S.28 27 11.0	0.461

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	18 13 11.09	2.4478	S.28 27 11.0	0.461
1	18 15 38.03	2.4501	28 26 38.4	0.627
2	18 18 5.10	2.4522	28 25 55.8	0.792
3	18 20 32.30	2.4542	28 25 3.3	0.958
4	18 22 59.61	2.4561	28 24 0.8	1.125
5	18 25 27.03	2.4579	28 22 48.3	1.292
6	18 27 54.56	2.4595	28 21 25.7	1.460
7	18 30 22.18	2.4610	28 19 53.1	1.627
8	18 32 49.88	2.4623	28 18 10.4	1.795
9	18 35 17.66	2.4636	28 16 17.7	1.963
10	18 37 45.51	2.4647	28 14 14.9	2.131
11	18 40 13.42	2.4656	28 12 2.0	2.300
12	18 42 41.38	2.4664	28 9 38.9	2.469
13	18 45 9.39	2.4671	28 7 5.7	2.637
14	18 47 37.44	2.4677	28 4 22.4	2.806
15	18 50 5.52	2.4682	28 1 29.0	2.975
16	18 52 33.62	2.4685	27 58 25.4	3.144
17	18 55 1.74	2.4687	27 55 11.7	3.313
18	18 57 29.86	2.4687	27 51 47.8	3.482
19	18 59 57.98	2.4686	27 48 13.8	3.651
20	19 2 26.09	2.4684	27 44 29.7	3.820
21	19 4 54.19	2.4681	27 40 35.4	3.989
22	19 7 22.27	2.4677	27 36 31.0	4.157
23	19 9 50.32	2.4671	S.27 32 16.5	4.326

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 12 18.33	2.4664	S.27 27 51.9	4.494
1	19 14 46.29	2.4656	27 23 17.2	4.662
2	19 17 14.20	2.4647	27 18 32.5	4.829
3	19 19 42.05	2.4637	27 13 37.7	4.996
4	19 22 9.84	2.4625	27 8 32.9	5.163
5	19 24 37.55	2.4612	27 3 18.1	5.331
6	19 27 5.18	2.4597	26 57 53.2	5.497
7	19 29 32.72	2.4582	26 52 18.4	5.662
8	19 32 0.16	2.4565	26 46 33.7	5.828
9	19 34 27.50	2.4548	26 40 39.0	5.993
10	19 36 54.74	2.4530	26 34 34.4	6.158
11	19 39 21.87	2.4510	26 28 20.0	6.322
12	19 41 48.87	2.4489	26 21 55.8	6.485
13	19 44 15.74	2.4467	26 15 21.8	6.648
14	19 46 42.48	2.4445	26 8 38.0	6.811
15	19 49 9.08	2.4421	26 1 44.5	6.972
16	19 51 35.53	2.4396	25 54 41.4	7.132
17	19 54 1.83	2.4371	25 47 28.7	7.292
18	19 56 27.98	2.4344	25 40 6.3	7.452
19	19 58 53.96	2.4316	25 32 34.4	7.611
20	20 1 19.77	2.4287	25 24 53.0	7.768
21	20 3 45.41	2.4258	25 17 2.2	7.925
22	20 6 10.87	2.4228	25 9 2.0	8.082
23	20 8 36.15	2.4197	25 0 52.4	8.237
24	20 11 1.24	2.4166	S.24 52 33.5	8.392

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.					TUESDAY 27.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	20 11 1.24	2.4165	S.24 52 33.5	8.392	0	22 2 27.29	2.2203	S.15 33 11.6	14.406
1	20 13 26.13	2.4132	24 44 5.3	8.547	1	22 4 40.39	2.2163	15 18 44.5	14.497
2	20 15 50.82	2.4098	24 35 27.9	8.699	2	22 6 53.25	2.2124	15 4 12.0	14.585
3	20 18 15.31	2.4065	24 26 41.4	8.850	3	22 9 5.88	2.2085	14 49 34.3	14.672
4	20 20 39.60	2.4031	24 17 45.9	9.000	4	22 11 18.27	2.2046	14 34 51.4	14.757
5	20 23 3.68	2.3996	24 8 41.4	9.150	5	22 13 30.43	2.2008	14 20 3.4	14.841
6	20 25 27.55	2.3960	23 59 27.9	9.299	6	22 15 42.36	2.1970	14 5 10.4	14.924
7	20 27 51.20	2.3923	23 50 5.5	9.447	7	22 17 54.07	2.1932	13 50 12.5	15.006
8	20 30 14.63	2.3885	23 40 34.3	9.593	8	22 20 5.55	2.1895	13 35 9.7	15.086
9	20 32 37.83	2.3847	23 30 54.3	9.739	9	22 22 16.81	2.1858	13 20 2.2	15.164
10	20 35 0.80	2.3809	23 21 5.5	9.884	10	22 24 27.85	2.1822	13 4 50.1	15.240
11	20 37 23.54	2.3771	23 11 8.1	10.028	11	22 26 38.68	2.1787	12 49 33.4	15.316
12	20 39 46.05	2.3732	23 1 2.1	10.171	12	22 28 49.30	2.1752	12 34 12.2	15.389
13	20 42 8.32	2.3692	22 50 47.6	10.312	13	22 30 59.71	2.1718	12 18 46.7	15.460
14	20 44 30.35	2.3652	22 40 24.7	10.452	14	22 33 9.92	2.1685	12 3 17.0	15.529
15	20 46 52.14	2.3611	22 29 53.4	10.590	15	22 35 19.93	2.1652	11 47 43.2	15.597
16	20 49 13.68	2.3569	22 19 13.9	10.727	16	22 37 29.74	2.1618	11 32 5.3	15.664
17	20 51 34.97	2.3527	22 8 26.2	10.863	17	22 39 39.35	2.1585	11 16 23.4	15.730
18	20 53 56.01	2.3486	21 57 30.3	10.999	18	22 41 48.76	2.1553	11 0 37.7	15.793
19	20 56 16.80	2.3444	21 46 26.3	11.133	19	22 43 57.99	2.1523	10 44 48.2	15.855
20	20 58 37.34	2.3402	21 35 14.3	11.265	20	22 46 7.04	2.1493	10 28 55.0	15.915
21	21 0 57.63	2.3359	21 23 54.5	11.395	21	22 48 15.91	2.1464	10 12 58.3	15.974
22	21 3 17.66	2.3316	21 12 26.9	11.525	22	22 50 24.61	2.1436	9 56 58.1	16.032
23	21 5 37.43	2.3273	S.21 0 51.5	11.654	23	22 52 33.14	2.1408	S. 9 40 54.5	16.088
	MONDAY 26.					WEDNESDAY 28.			
0	21 7 56.94	2.3230	S.20 49 8.4	11.781	0	22 54 41.50	2.1380	S. 9 24 47.5	16.143
1	21 10 16.19	2.3187	20 37 17.7	11.907	1	22 56 49.70	2.1353	9 8 37.4	16.194
2	21 12 35.18	2.3143	20 25 19.5	12.032	2	22 58 57.74	2.1327	8 52 24.2	16.244
3	21 14 53.91	2.3100	20 13 13.9	12.155	3	23 1 5.62	2.1301	8 36 8.0	16.294
4	21 17 12.38	2.3057	20 1 0.9	12.277	4	23 3 13.35	2.1277	8 19 48.9	16.342
5	21 19 30.59	2.3013	19 48 40.6	12.397	5	23 5 20.94	2.1253	8 3 26.9	16.388
6	21 21 48.54	2.2969	19 36 13.2	12.516	6	23 7 28.39	2.1230	7 47 2.2	16.433
7	21 24 6.22	2.2925	19 23 38.7	12.633	7	23 9 35.70	2.1207	7 30 34.9	16.477
8	21 26 23.64	2.2882	19 10 57.2	12.750	8	23 11 42.87	2.1184	7 14 5.0	16.518
9	21 28 40.80	2.2838	18 58 8.7	12.865	9	23 13 49.91	2.1163	6 57 32.7	16.557
10	21 30 57.70	2.2795	18 45 13.4	12.977	10	23 15 56.83	2.1144	6 40 58.1	16.596
11	21 33 14.34	2.2752	18 32 11.4	13.089	11	23 18 3.64	2.1125	6 24 21.2	16.633
12	21 35 30.72	2.2708	18 19 2.7	13.199	12	23 20 10.34	2.1107	6 7 42.1	16.668
13	21 37 46.84	2.2665	18 5 47.5	13.307	13	23 22 16.93	2.1089	5 51 1.0	16.702
14	21 40 2.70	2.2622	17 52 25.8	13.415	14	23 24 23.41	2.1072	5 34 17.9	16.734
15	21 42 18.30	2.2579	17 38 57.7	13.522	15	23 26 29.79	2.1056	5 17 32.9	16.765
16	21 44 33.65	2.2536	17 25 23.2	13.627	16	23 28 36.08	2.1041	5 0 46.1	16.793
17	21 46 48.74	2.2493	17 11 42.5	13.729	17	23 30 42.28	2.1026	4 43 57.7	16.820
18	21 49 3.57	2.2450	16 57 55.7	13.830	18	23 32 48.39	2.1012	4 27 7.7	16.846
19	21 51 18.15	2.2408	16 44 2.9	13.929	19	23 34 54.42	2.0998	4 10 16.2	16.870
20	21 53 32.47	2.2366	16 30 4.2	14.027	20	23 37 0.37	2.0986	3 53 23.3	16.892
21	21 55 46.54	2.2325	16 15 59.6	14.124	21	23 39 6.25	2.0975	3 36 29.1	16.913
22	21 58 0.37	2.2284	16 1 49.2	14.219	22	23 41 12.07	2.0965	3 19 33.7	16.933
23	22 0 13.95	2.2243	15 47 33.2	14.313	23	23 43 17.83	2.0956	3 2 37.1	16.951
24	22 2 27.29	2.2203	S.15 33 11.6	14.406	24	23 45 23.54	2.0947	S. 2 45 39.5	16.967

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 45 23.54	2.0947	S. 2 45 39.5	16.967
1	23 47 29.20	2.0939	2 28 41.0	16.982
2	23 49 34.81	2.0932	2 11 41.7	16.995
3	23 51 40.38	2.0926	1 54 41.7	17.006
4	23 53 45.92	2.0921	1 37 41.0	17.016
5	23 55 51.43	2.0916	1 20 39.8	17.024
6	23 57 56.91	2.0912	1 3 38.1	17.031
7	0 0 2.37	2.0909	0 46 36.0	17.037
8	0 2 7.81	2.0907	0 29 33.6	17.041
9	0 4 13.25	2.0907	S. 0 12 31.0	17.043
10	0 6 18.69	2.0907	N. 0 4 31.6	17.043
11	0 8 24.13	2.0908	0 21 34.2	17.042
12	0 10 29.58	2.0909	0 38 36.7	17.040
13	0 12 35.04	2.0912	0 55 39.0	17.036
14	0 14 40.52	2.0915	1 12 41.0	17.031
15	0 16 46.02	2.0919	1 29 42.7	17.024
16	0 18 51.55	2.0925	1 46 43.9	17.015
17	0 20 57.12	2.0931	2 3 44.5	17.005
18	0 23 2.72	2.0938	2 20 44.5	16.993
19	0 25 8.37	2.0946	2 37 43.7	16.980
20	0 27 14.07	2.0954	2 54 42.1	16.966
21	0 29 19.82	2.0964	3 11 39.7	16.950
22	0 31 25.63	2.0975	3 28 36.2	16.932
23	0 33 31.51	2.0986	N. 3 45 31.6	16.918

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 35 37.46	2.0998	N. 4 2 25.8	16.893
1	0 37 43.48	2.1011	4 19 18.8	16.871
2	0 39 49.59	2.1025	4 36 10.4	16.847
3	0 41 55.78	2.1039	4 53 0.5	16.821
4	0 44 2.06	2.1065	5 9 49.0	16.794
5	0 46 8.44	2.1072	5 26 35.8	16.766
6	0 48 14.92	2.1089	5 43 20.9	16.736
7	0 50 21.51	2.1108	6 0 4.1	16.704
8	0 52 28.22	2.1128	6 16 45.4	16.671
9	0 54 35.05	2.1148	6 33 24.7	16.637
10	0 56 42.00	2.1169	6 50 1.9	16.601
11	0 58 49.08	2.1191	7 6 36.9	16.563
12	1 0 56.29	2.1213	7 23 9.5	16.523
13	1 3 3.64	2.1237	7 39 39.7	16.482
14	1 5 11.13	2.1261	7 56 7.4	16.440
15	1 7 18.77	2.1286	8 12 32.6	16.397
16	1 9 26.56	2.1312	8 28 55.1	16.352
17	1 11 34.52	2.1339	8 45 14.9	16.305
18	1 13 42.64	2.1367	9 1 31.8	16.257
19	1 15 50.93	2.1396	9 17 45.8	16.207
20	1 17 59.39	2.1426	9 33 56.7	16.156
21	1 20 8.03	2.1456	9 50 4.5	16.103
22	1 22 16.86	2.1487	10 6 9.1	16.049
23	1 24 25.87	2.1518	10 22 10.4	15.993
24	1 26 35.07	2.1550	N.10 38 8.3	15.935

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 26 35.07	2.1550	N.10 38 8.3	15.935
1	1 28 44.47	2.1583	10 54 2.6	15.875
2	1 30 54.07	2.1617	11 9 53.3	15.815
3	1 33 3.88	2.1653	11 25 40.4	15.753
4	1 35 13.91	2.1689	11 41 23.7	15.689
5	1 37 24.15	2.1725	11 57 3.1	15.623
6	1 39 34.61	2.1762	12 12 38.5	15.556
7	1 41 45.30	2.1800	12 28 9.9	15.488
8	1 43 56.22	2.1839	12 43 37.1	15.418
9	1 46 7.37	2.1878	12 59 0.1	15.346
10	1 48 18.76	2.1918	13 14 18.8	15.272
11	1 50 30.39	2.1959	13 29 33.0	15.198
12	1 52 42.27	2.2000	13 44 42.7	15.123
13	1 54 54.40	2.2042	13 59 47.8	15.046
14	1 57 6.78	2.2085	14 14 48.2	14.967
15	1 59 19.42	2.2128	14 29 43.8	14.886
16	2 1 32.32	2.2172	14 44 34.5	14.803
17	2 3 45.49	2.2217	14 59 20.2	14.719
18	2 5 58.93	2.2262	15 14 0.8	14.634
19	2 8 12.64	2.2308	15 28 36.3	14.547
20	2 10 26.63	2.2356	15 43 6.5	14.458
21	2 12 40.90	2.2402	15 57 31.3	14.368
22	2 14 55.46	2.2450	16 11 50.7	14.276
23	2 17 10.30	2.2497	N.16 26 4.5	14.183

SUNDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 19 25.42	2.2545	N.16 40 12.7	14.088

PHASES OF THE MOON.

	Day.	h.	m.
☽ First Quarter, .	3	0	14.3
○ Full Moon, . .	9	21	7.9
☾ Last Quarter, . .	17	16	50.1
● New Moon, . .	25	11	26.2

	Day.	h.
☾ Perigee, ...	5	5.1
☾ Apogee, ...	17	15.3
☾ Perigee, ...	29	21.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	64 1 37	2727	65 37 41	2721	67 13 53	2716	68 50 12	2711
	Mars	W.	25 29 37	2654	27 7 20	2646	28 45 13	2639	30 23 15	2632
	Venus	W.	24 5 34	2784	25 40 23	2776	27 15 22	2769	28 50 30	2763
	a Arietis	E.	51 46 25	2441	50 3 49	2441	48 21 12	2440	46 38 34	2440
	Aldebaran	E.	82 30 55	2438	80 48 15	2434	79 5 29	2430	77 22 37	2426
	Saturn	E.	115 35 4	2368	113 50 44	2364	112 6 18	2360	110 21 46	2356
2	Sun	W.	76 53 29	2686	78 30 28	2681	80 7 34	2676	81 44 46	2671
	Mars	W.	38 35 39	2601	40 14 31	2596	41 53 31	2591	43 32 39	2586
	Venus	W.	36 48 10	2735	38 24 5	2729	40 0 7	2723	41 36 16	2719
	a Arietis	E.	38 5 38	2450	36 23 15	2456	34 41 0	2463	32 58 55	2472
	Aldebaran	E.	68 47 7	2411	67 3 48	2409	65 20 26	2407	63 37 1	2405
	Saturn	E.	101 37 36	2335	99 52 27	2330	98 7 11	2325	96 21 48	2321
	Pollux	E.	112 12 1	2340	110 27 0	2336	108 41 53	2333	106 56 41	2328
3	Sun	W.	89 52 15	2652	91 30 0	2647	93 7 51	2643	94 45 47	2640
	Mars	W.	51 49 54	2564	53 29 38	2559	55 9 29	2556	56 49 25	2552
	Venus	W.	49 38 27	2697	51 15 11	2693	52 52 0	2689	54 28 55	2685
	Aldebaran	E.	54 59 33	2403	53 16 3	2405	51 32 35	2407	49 49 10	2409
	Saturn	E.	87 33 29	2303	85 47 34	2300	84 1 34	2296	82 15 28	2293
	Pollux	E.	98 9 12	2309	96 23 26	2306	94 37 35	2302	92 51 39	2299
4	Sun	W.	102 56 30	2626	104 34 50	2623	106 13 14	2621	107 51 41	2619
	Mars	W.	65 10 18	2535	66 50 41	2532	68 31 10	2530	70 11 42	2527
	Venus	W.	62 34 42	2669	64 12 4	2666	65 49 30	2663	67 27 1	2660
	Fomalhaut	W.	58 30 50	2580	60 10 12	2567	61 49 52	2556	63 29 48	2545
	Jupiter	W.	25 11 13	2324	26 56 38	2321	28 42 7	2318	30 27 40	2317
	Saturn	E.	73 23 59	2281	71 37 31	2279	69 51 0	2276	68 4 25	2274
	Pollux	E.	84 0 52	2285	82 14 30	2282	80 28 4	2280	78 41 35	2278
	Regulus	E.	120 42 48	2291	118 56 35	2288	117 10 18	2285	115 23 57	2283
5	Sun	W.	116 4 29	2612	117 43 8	2611	119 21 48	2612	121 0 27	2612
	Mars	W.	78 35 4	2518	80 15 51	2517	81 56 41	2516	83 37 32	2515
	Venus	W.	75 35 17	2651	77 13 3	2649	78 50 51	2648	80 28 41	2647
	Fomalhaut	W.	71 52 42	2505	73 33 48	2500	75 15 1	2496	76 56 20	2492
	a Pegasi	W.	51 26 58	2766	53 2 11	2742	54 37 55	2721	56 14 7	2701
	Jupiter	W.	39 16 4	2309	41 1 51	2307	42 47 40	2307	44 33 30	2306
	Saturn	E.	59 11 7	2272	57 24 25	2272	55 37 43	2272	53 51 2	2272
	Pollux	E.	69 48 28	2270	68 1 44	2268	66 14 58	2268	64 28 12	2268
	Regulus	E.	106 31 23	2273	104 44 44	2272	102 58 4	2272	101 11 23	2270
6	Mars	W.	92 1 54	2517	93 42 45	2517	95 23 36	2518	97 4 24	2520
	Venus	W.	88 37 58	2648	90 15 48	2649	91 53 37	2649	93 31 25	2651
	Fomalhaut	W.	85 23 58	2483	87 5 35	2484	88 47 11	2485	90 28 46	2486
	a Pegasi	W.	64 20 46	2632	65 58 57	2624	67 37 19	2616	69 15 52	2609
	Jupiter	W.	53 22 44	2307	55 8 34	2308	56 54 22	2310	58 40 7	2312
	Saturn	E.	44 58 6	2283	43 11 42	2287	41 25 24	2292	39 39 13	2297
	Pollux	E.	55 34 15	2269	53 47 30	2270	52 0 46	2271	50 14 4	2273
	Regulus	E.	92 17 48	2272	90 31 7	2272	88 44 27	2274	86 57 49	2275
7	Mars	W.	105 27 40	2533	107 8 8	2537	108 48 30	2541	110 28 46	2545
	Venus	W.	101 39 41	2665	103 17 8	2669	104 54 30	2672	106 31 47	2677
	a Pegasi	W.	77 30 25	2592	79 9 31	2593	80 48 36	2593	82 27 40	2595
	Jupiter	W.	67 28 9	2324	69 13 33	2327	70 58 53	2332	72 44 6	2336
	a Arietis	W.	34 16 18	2405	35 59 45	2399	37 43 21	2394	39 27 4	2391

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	70 26 37	2705	72 3 10	2700	73 39 50	2695	75 16 36	2690
	Mars	W.	32 1 26	2626	33 39 46	2619	35 18 15	2612	36 56 53	2607
	Venus	W.	30 25 47	2757	32 1 11	2751	33 36 43	2745	35 12 23	2740
	a Arietis	E.	44 55 56	2440	43 13 18	2441	41 30 41	2443	39 48 7	2446
	Aldebaran	E.	75 39 40	2423	73 56 38	2420	72 13 32	2417	70 30 22	2414
	Saturn	E.	108 37 8	2352	106 52 24	2348	105 7 34	2344	103 22 38	2339
2	Sun	W.	83 22 6	2666	84 59 31	2663	86 37 1	2659	88 14 36	2656
	Mars	W.	45 11 54	2581	46 51 15	2577	48 30 42	2572	50 10 15	2568
	Venus	W.	43 12 31	2715	44 48 51	2710	46 25 17	2706	48 1 49	2701
	a Arietis	E.	31 17 2	2482	29 35 24	2497	27 54 7	2518	26 13 19	2546
	Aldebaran	E.	61 53 34	2404	60 10 5	2403	58 26 35	2403	56 43 4	2403
	Saturn	E.	94 36 19	2317	92 50 45	2313	91 5 5	2310	89 19 20	2306
	Pollux	E.	105 11 22	2324	103 25 58	2321	101 40 29	2316	99 54 53	2313
3	Sun	W.	96 23 47	2638	98 1 51	2634	99 40 0	2631	101 18 13	2628
	Mars	W.	58 29 26	2548	60 9 33	2545	61 49 44	2542	63 29 59	2539
	Venus	W.	56 5 55	2681	57 43 0	2678	59 20 10	2675	60 57 24	2672
	Aldebaran	E.	48 5 48	2412	46 22 30	2416	44 39 18	2421	42 56 13	2427
	Saturn	E.	80 29 18	2290	78 43 4	2287	76 56 46	2285	75 10 24	2283
	Pollux	E.	91 5 38	2296	89 19 33	2294	87 33 24	2290	85 47 10	2287
4	Sun	W.	109 30 10	2618	111 8 41	2615	112 47 15	2614	114 25 51	2612
	Mars	W.	71 52 17	2525	73 32 55	2523	75 13 36	2522	76 54 19	2520
	Venus	W.	69 4 34	2658	70 42 10	2655	72 19 50	2653	73 57 33	2652
	Fomalhaut	W.	65 9 59	2535	66 50 23	2527	68 30 59	2520	70 11 45	2512
	Jupiter	W.	32 13 15	2315	33 58 53	2312	35 44 35	2311	37 30 19	2310
	Saturn	E.	66 17 48	2274	64 31 10	2272	62 44 30	2272	60 57 49	2271
	Pollux	E.	76 55 3	2275	75 8 28	2274	73 21 50	2272	71 35 10	2271
	Regulus	E.	113 37 32	2281	111 51 4	2279	110 4 33	2277	108 17 59	2275
5	Sun	W.	122 39 6	2612	124 17 44	2613	125 56 21	2614	127 34 57	2615
	Mars	W.	85 18 24	2515	86 59 17	2515	88 40 10	2515	90 21 3	2516
	Venus	W.	82 6 32	2647	83 44 23	2647	85 22 14	2646	87 0 6	2646
	Fomalhaut	W.	78 37 45	2489	80 19 14	2487	82 0 46	2485	83 42 21	2483
	a Pegasi	W.	57 50 46	2684	59 27 47	2669	61 5 9	2655	62 42 49	2643
	Jupiter	W.	46 19 21	2306	48 5 12	2306	49 51 3	2306	51 36 54	2307
	Saturn	E.	52 4 22	2274	50 17 44	2275	48 31 8	2277	46 44 35	2260
	Pollux	E.	62 41 25	2267	60 54 37	2267	59 7 49	2268	57 21 2	2268
	Regulus	E.	99 24 40	2270	97 37 57	2270	95 51 14	2270	94 4 31	2270
6	Mars	W.	98 45 10	2522	100 25 54	2525	102 6 34	2527	103 47 9	2530
	Venus	W.	95 9 11	2653	96 46 54	2655	98 24 34	2658	100 2 10	2662
	Fomalhaut	W.	92 10 19	2489	93 51 48	2492	95 33 13	2495	97 14 33	2500
	a Pegasi	W.	70 54 35	2604	72 33 25	2599	74 12 21	2596	75 51 21	2593
	Jupiter	W.	60 25 49	2313	62 11 29	2315	63 57 6	2317	65 42 40	2321
	Saturn	E.	37 53 10	2304	36 7 16	2311	34 21 32	2319	32 36 0	2328
	Pollux	E.	48 27 25	2274	46 40 49	2278	44 54 16	2280	43 7 47	2283
	Regulus	E.	85 11 13	2277	83 24 40	2279	81 38 10	2282	79 51 44	2285
7	Mars	W.	112 8 56	2551	113 48 59	2556	115 28 55	2561	117 8 44	2566
	Venus	W.	108 8 58	2682	109 46 2	2687	111 22 59	2692	112 59 49	2698
	a Pegasi	W.	84 6 42	2597	85 45 41	2601	87 24 35	2606	89 3 23	2610
	Jupiter	W.	74 29 13	2341	76 14 13	2346	77 59 6	2351	79 43 51	2357
	a Arietis	W.	41 10 52	2389	42 54 43	2387	44 38 36	2388	46 22 28	2389

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′		° ′ ″	
7	Saturn E.	30 50 42	2340	29 5 41	2354	27 21 0	2370	25 36 42	2388
	Regulus E.	78 5 22	2288	76 19 5	2291	74 32 53	2296	72 46 46	2300
8	*a* Pegasi W.	90 42 4	2617	92 20 36	2624	93 58 58	2632	95 37 10	2640
	Jupiter W.	81 28 28	2363	83 12 56	2370	84 57 14	2377	86 41 22	2384
	a Arietis W.	48 6 19	2391	49 50 7	2393	51 33 52	2397	53 17 31	2401
	Regulus E.	63 58 0	2326	62 12 39	2333	60 27 28	2340	58 42 27	2348
	Spica E.	117 58 39	2320	116 13 19	2327	114 27 49	2334	112 42 39	2340
9	Jupiter W.	95 19 18	2425	97 2 17	2434	98 45 3	2445	100 27 34	2455
	a Arietis W.	61 53 59	2431	63 36 49	2439	65 19 28	2447	67 1 56	2456
	Aldebaran W.	31 54 28	2603	33 33 19	2593	35 12 23	2586	36 51 37	2582
	Regulus E.	50 0 14	2391	48 16 26	2400	46 32 51	2410	44 49 31	2421
	Spica E.	103 59 30	2382	102 15 29	2390	100 31 40	2400	98 48 5	2410
10	Jupiter W.	108 56 29	2510	110 37 29	2522	112 18 12	2533	113 58 39	2546
	a Arietis W.	75 31 0	2505	77 12 6	2517	78 52 56	2527	80 33 31	2539
	Aldebaran W.	45 8 29	2586	46 47 43	2591	48 26 50	2596	50 5 48	2604
	Regulus E.	36 16 46	2480	34 35 4	2492	32 53 40	2507	31 12 36	2521
	Spica E.	90 13 52	2464	88 31 48	2475	86 50 0	2487	85 8 29	2499
11	*a* Arietis W.	88 52 13	2601	90 31 6	2615	92 9 40	2629	93 47 56	2643
	Aldebaran W.	58 18 3	2649	59 55 52	2659	61 33 27	2670	63 10 47	2681
	Saturn W.	25 52 11	2638	27 30 15	2643	29 8 12	2649	30 46 2	2655
	Spica E.	76 45 13	2564	75 5 28	2577	73 26 1	2590	71 46 52	2604
12	*a* Arietis W.	101 54 32	2713	103 30 54	2728	105 6 57	2742	106 42 41	2756
	Aldebaran W.	71 13 34	2742	72 49 18	2755	74 24 45	2768	75 59 55	2781
	Saturn W.	38 52 54	2696	40 29 40	2707	42 6 11	2718	43 42 27	2729
	Pollux W.	27 15 40	2681	28 52 46	2693	30 29 35	2707	32 6 6	2720
	Spica E.	63 35 49	2673	61 58 33	2687	60 21 35	2701	58 44 56	2714
	Antares E.	109 29 29	2672	107 52 11	2686	106 15 12	2699	104 38 31	2713
13	Aldebaran W.	83 51 32	2846	85 25 0	2859	86 58 11	2873	88 31 5	2886
	Saturn W.	51 40 0	2788	53 14 44	2800	54 49 12	2812	56 23 24	2824
	Pollux W.	40 4 14	2787	41 38 59	2800	43 13 27	2813	44 47 38	2826
	Spica E.	50 46 15	2783	49 11 25	2797	47 36 53	2810	46 2 38	2824
	Antares E.	96 39 45	2782	95 4 54	2795	93 30 20	2809	91 56 4	2822
14	Aldebaran W.	96 11 29	2950	97 42 45	2962	99 13 46	2973	100 44 32	2986
	Saturn W.	64 10 36	2882	65 43 18	2893	67 15 46	2905	68 47 59	2916
	Pollux W.	52 34 26	2887	54 7 1	2899	55 39 20	2911	57 11 25	2922
	Regulus W.	16 2 59	2961	17 34 13	2953	19 5 25	2956	20 36 33	2961
	Spica E.	38 15 36	2886	36 42 59	2898	35 10 37	2910	33 38 31	2921
	Antares E.	84 8 53	2885	82 36 15	2897	81 3 52	2908	79 31 43	2919
	Sun E.	130 30 10	3287	129 5 43	3299	127 41 30	3310	126 17 30	2322
15	Saturn W.	76 25 47	2965	77 56 44	2974	79 27 29	2982	80 58 4	2989
	Pollux W.	64 48 27	2973	66 19 13	2983	67 49 48	2991	69 20 12	2999
	Regulus W.	28 10 24	2994	29 40 44	3001	31 10 56	3008	32 40 59	3015
	Antares E.	71 54 24	2970	70 23 34	2981	68 52 57	2989	67 22 31	2997
	Sun E.	119 20 42	3374	117 57 56	3384	116 35 21	3393	115 12 56	3401
16	Saturn W.	88 28 37	3026	89 58 18	3030	91 27 53	3039	92 57 20	3043
	Pollux W.	76 49 47	3035	78 19 16	3041	79 48 38	3047	81 17 53	3051

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
7	Saturn	E.	23 52 50	2412	22 9 32	2439	20 26 53	2473	18 45 2	2518
	Regulus	E.	71 0 46	2304	69 14 53	2309	67 29 7	2315	65 43 29	2321
8	*a* Pegasi	W.	97 15 10	2650	98 52 57	2661	100 30 29	2672	102 7 46	2685
	Jupiter	W.	88 25 20	2391	90 9 7	2398	91 52 44	2408	93 36 7	2415
	a Arietis	W.	55 1 4	2406	56 44 30	2412	58 27 48	2417	60 10 58	2424
	Regulus	E.	56 57 37	2355	55 12 58	2364	53 28 31	2372	51 44 16	2381
	Spica	E.	110 57 38	2348	109 12 48	2356	107 28 10	2364	105 43 44	2373
9	Jupiter	W.	102 9 51	2465	103 51 54	2475	105 33 42	2487	107 15 14	2499
	a Arietis	W.	68 44 11	2465	70 26 14	2474	72 8 4	2485	73 49 39	2494
	Aldebaran	W.	38 30 57	2578	40 10 22	2578	41 49 47	2580	43 29 10	2583
	Regulus	E.	43 6 26	2431	41 23 36	2443	39 41 3	2455	37 58 46	2467
	Spica	E.	97 4 45	2420	95 21 39	2431	93 38 48	2441	91 56 12	2453
10	Jupiter	W.	115 38 48	2559	117 18 39	2572	118 58 13	2585	120 37 29	2596
	a Arietis	W.	82 13 50	2551	83 53 52	2564	85 33 36	2577	87 13 3	2589
	Aldebaran	W.	51 44 37	2612	53 23 16	2620	55 1 44	2629	56 40 0	2638
	Regulus	E.	29 31 52	2535	27 51 28	2551	26 11 25	2566	24 31 44	2583
	Spica	E.	83 27 15	2512	81 46 18	2525	80 5 39	2537	78 25 17	2550
11	*a* Arietis	W.	95 25 53	2657	97 3 31	2671	98 40 50	2684	100 17 51	2699
	Aldebaran	W.	64 47 52	2693	66 24 41	2704	68 1 15	2716	69 37 33	2729
	Saturn	W.	32 23 44	2661	34 1 17	2669	35 38 40	2675	37 15 53	2684
	Spica	E.	70 8 2	2618	68 29 31	2631	66 51 18	2645	65 13 24	2659
12	*a* Arietis	W.	108 18 6	2772	109 53 11	2786	111 27 57	2801	113 2 24	2816
	Aldebaran	W.	77 34 48	2793	79 9 25	2806	80 43 45	2820	82 17 47	2833
	Saturn	W.	45 18 29	2740	46 54 16	2753	48 29 46	2765	50 5 0	2775
	Pollux	W.	33 42 19	2734	35 18 14	2747	36 53 51	2760	38 29 11	2773
	Spica	E.	57 8 35	2729	55 32 33	2742	53 56 49	2756	52 21 23	2769
	Antares	E.	103 2 9	2728	101 26 6	2741	99 50 21	2755	98 14 54	2769
13	Aldebaran	W.	90 3 42	2898	91 36 3	2911	93 8 8	2924	94 39 57	2937
	Saturn	W.	57 57 21	2835	59 31 3	2848	61 4 29	2859	62 37 40	2871
	Pollux	W.	46 21 32	2838	47 55 10	2952	49 28 31	2964	51 1 36	2976
	Spica	E.	44 28 41	2836	42 55 0	2849	41 21 36	2862	39 48 28	2874
	Antares	E.	90 22 5	2835	88 48 23	2848	87 14 57	2860	85 41 47	2873
14	Aldebaran	W.	102 15 2	2997	103 45 18	3009	105 15 20	3020	106 45 8	3030
	Saturn	W.	70 19 58	2926	71 51 44	2936	73 23 17	2946	74 54 38	2955
	Pollux	W.	58 43 16	2933	60 14 53	2943	61 46 17	2954	63 17 28	2963
	Regulus	W.	22 7 35	2966	23 38 30	2973	25 9 17	2960	26 39 55	2967
	Spica	E.	32 6 39	2932	30 35 1	2943	29 3 37	2954	27 32 26	2964
	Antares	E.	77 59 48	2930	76 28 7	2941	74 56 40	2951	73 25 26	2961
	Sun	E.	124 53 44	3332	123 30 10	3344	122 6 49	3354	120 43 40	3364
15	Saturn	W.	82 28 30	2997	83 58 46	3006	85 28 52	3013	86 58 49	3020
	Pollux	W.	70 50 26	3007	72 20 30	3015	73 50 24	3022	75 20 10	3029
	Regulus	W.	34 10 53	3022	35 40 38	3029	37 10 15	3034	38 39 45	3040
	Antares	E.	65 52 15	3005	64 22 8	3012	62 52 10	3020	61 22 22	3027
	Sun	E.	113 50 41	3409	112 28 35	3417	111 6 38	3425	109 44 50	3432
16	Saturn	W.	94 26 39	3047	95 55 53	3052	97 25 2	3053	98 54 9	3057
	Pollux	W.	82 47 3	3056	84 16 7	3060	85 45 6	3063	87 14 1	3066

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Regulus	W.	40 9 8	3046	41 38 24	3052	43 7 33	3056	44 36 37	3060
	Antares	E.	59 52 43	3034	58 23 12	3039	56 53 47	3044	55 24 29	3049
	Sun	E.	108 23 10	3438	107 1 37	3445	105 40 11	3451	104 18 52	3456
17	Saturn	W.	100 23 11	3060	101 52 9	3064	103 21 3	3065	104 49 56	3066
	Pollux	W.	88 42 52	3069	90 11 39	3071	91 40 24	3073	93 9 7	3073
	Regulus	W.	52 0 47	3076	53 29 26	3078	54 58 3	3078	56 26 39	3080
	Antares	E.	47 59 20	3067	46 30 30	3069	45 1 42	3070	43 32 56	3073
	Sun	E.	97 33 32	3474	96 12 39	3476	94 51 48	3478	93 30 59	3479
18	Pollux	W.	100 32 37	3071	102 1 22	3069	103 30 9	3067	104 58 59	3065
	Regulus	W.	63 49 34	3076	65 18 13	3074	66 46 54	3071	68 15 39	3069
	Antares	E.	36 9 17	3069	34 40 30	3068	33 11 41	3065	31 42 49	3062
	Sun	E.	86 47 1	3476	85 26 10	3474	84 5 17	3471	82 44 21	3469
19	Regulus	W.	75 40 30	3046	77 9 46	3040	78 39 9	3034	80 8 40	3027
	Spica	W.	21 37 39	3044	23 6 57	3038	24 36 23	3031	26 5 57	3024
	Sun	E.	75 58 35	3445	74 37 9	3438	73 15 36	3431	71 53 55	3425
20	Regulus	W.	87 38 32	2987	89 9 1	2977	90 39 42	2968	92 10 35	2958
	Spica	W.	33 36 9	2983	35 6 43	2973	36 37 29	2964	38 8 27	2954
	Sun	E.	65 3 21	3382	63 40 44	3372	62 17 56	3362	60 54 56	3352
21	Regulus	W.	99 48 17	2904	101 20 31	2892	102 53 0	2880	104 25 45	2867
	Spica	W.	45 46 35	2898	47 18 56	2887	48 51 31	2875	50 24 22	2862
	Sun	E.	53 56 51	3295	52 32 34	3282	51 8 2	3270	49 43 16	3258
22	Spica	W.	58 12 46	2797	59 47 18	2783	61 22 8	2769	62 57 17	2755
	Sun	E.	42 35 39	3193	41 9 21	3180	39 42 48	3167	38 15 59	3154
27	Sun	W.	19 55 13	2750	21 30 47	2730	23 6 51	2712	24 43 15	2695
28	Sun	W.	32 49 51	2641	34 27 50	2633	36 6 0	2627	37 44 18	2622
	Aldebaran	E.	86 14 42	2341	84 29 42	2337	82 44 37	2335	80 59 28	2333
	Saturn	E.	117 14 43	2283	115 29 18	2278	113 42 46	2274	111 56 8	2270
29	Sun	W.	45 57 24	2603	47 36 15	2601	49 15 9	2599	50 54 5	2598
	Aldebaran	E.	72 13 14	2330	70 27 58	2331	68 42 43	2332	66 57 30	2334
	Saturn	E.	103 1 48	2258	101 14 47	2256	99 27 46	2259	97 40 46	2258
	Pollux	E.	115 38 38	2260	113 51 39	2259	112 4 39	2258	110 17 38	2258
30	Sun	W.	59 9 4	2597	60 48 3	2598	62 27 1	2599	64 5 58	2600
	Mars	W.	27 27 59	2510	29 8 59	2510	30 49 59	2510	32 30 59	2511
	Aldebaran	E.	58 12 23	2351	56 27 38	2357	54 43 1	2362	52 58 32	2369
	Saturn	E.	88 45 41	2261	86 58 44	2263	85 11 50	2264	83 24 57	2265
	Pollux	E.	101 22 36	2261	99 35 39	2262	97 48 44	2264	96 1 51	2266
31	Sun	W.	72 20 5	2611	73 58 45	2614	75 37 21	2616	77 15 54	2620
	Mars	W.	40 55 17	2522	42 36 0	2525	44 16 38	2529	45 57 11	2533
	Venus	W.	27 50 28	2640	29 28 29	2643	31 6 26	2645	32 44 20	2649
	Jupiter	W.	17 46 36	2340	19 31 37	2342	21 16 35	2344	23 1 30	2347
	Saturn	E.	74 31 23	2280	72 44 54	2282	70 58 28	2285	69 12 7	2290
	Pollux	E.	87 8 12	2277	85 21 39	2280	83 35 10	2283	81 48 46	2287
	Regulus	E.	123 51 22	2283	122 4 57	2285	120 18 36	2288	118 32 20	2291

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Regulus	W.	46 5 36	3064	47 34 30	3068	49 3 19	3070	50 32 5	3073
	Antares	E.	53 55 17	3054	52 26 11	3058	50 57 10	3061	49 28 13	3065
	Sun	E.	102 57 39	3461	101 36 31	3465	100 15 28	3468	98 54 28	3471
17	Saturn	W.	106 18 47	3067	107 47 37	3068	109 16 26	3068	110 45 15	3066
	Pollux	W.	94 37 49	3073	96 6 31	3074	97 35 12	3073	99 3 54	3073
	Regulus	W.	57 55 13	3080	59 23 47	3079	60 52 22	3079	62 20 57	3078
	Antares	E.	42 4 13	3072	40 35 29	3072	39 6 45	3073	37 38 2	3071
	Sun	E.	92 10 11	3480	90 49 24	3480	89 28 37	3480	88 7 50	3478
18	Pollux	W.	106 27 52	3061	107 56 49	3057	109 25 51	3052	110 54 59	3047
	Regulus	W.	69 44 27	3065	71 13 20	3060	72 42 18	3056	74 11 21	3052
	Antares	E.	30 13 53	3059	28 44 53	3055	27 15 48	3050	25 46 37	3046
	Sun	E.	81 23 21	3465	80 2 18	3461	78 41 10	3456	77 19 56	3449
19	Regulus	W.	81 38 19	3020	83 8 7	3012	84 38 5	3004	86 8 13	2996
	Spica	W.	27 35 40	3017	29 5 32	3009	30 35 34	3001	32 5 46	2992
	Sun	E.	70 32 7	3417	69 10 10	3409	67 48 4	3400	66 25 47	3392
20	Regulus	W.	93 41 41	2948	95 12 59	2937	96 44 31	2926	98 16 17	2915
	Spica	W.	39 39 37	2944	41 11 0	2933	42 42 37	2921	44 14 29	2910
	Sun	E.	59 31 45	3341	58 8 21	3330	56 44 44	3319	55 20 54	3307
21	Regulus	W.	105 58 46	2854	107 32 4	2842	109 5 38	2828	110 39 29	2815
	Spica	W.	51 57 29	2849	53 30 53	2837	55 4 33	2823	56 38 31	2810
	Sun	E.	48 18 15	3246	46 53 0	3232	45 27 28	3219	44 1 42	3205
22	Spica	W.	64 32 44	2741	66 8 29	2728	67 44 32	2718	69 20 54	2699
	Sun	E.	36 48 55	3143	35 21 36	3131	33 54 2	3119	32 26 13	3107
27	Sun	W.	26 20 1	2681	27 57 6	2669	29 34 28	2659	31 12 3	2649
28	Sun	W.	39 22 43	2616	41 1 16	2612	42 39 54	2609	44 18 37	2606
	Aldebaran	E.	79 14 16	2331	77 29 2	2331	75 43 47	2330	73 58 31	2329
	Saturn	E.	110 9 25	2268	108 22 38	2264	106 35 45	2261	104 48 48	2259
29	Sun	W.	52 33 3	2596	54 12 4	2596	55 51 4	2596	57 30 4	2596
	Aldebaran	E.	65 12 20	2336	63 27 13	2339	61 42 11	2343	59 57 14	2347
	Saturn	E.	95 53 45	2256	94 6 44	2256	92 19 42	2258	90 32 40	2260
	Pollux	E.	108 30 37	2256	106 43 36	2259	104 56 35	2258	103 9 35	2260
30	Sun	W.	65 44 53	2602	67 23 45	2604	69 2 35	2607	70 41 21	2608
	Mars	W.	34 11 57	2513	35 52 51	2516	37 33 42	2517	39 14 31	2520
	Aldebaran	E.	51 14 13	2377	49 30 5	2385	47 46 9	2394	46 2 25	2404
	Saturn	E.	81 38 6	2267	79 51 18	2271	78 4 36	2273	76 17 57	2277
	Pollux	E.	94 15 1	2268	92 28 14	2270	90 41 30	2272	88 54 49	2274
31	Sun	W.	78 54 21	2623	80 32 46	2627	82 11 4	2631	83 49 17	2634
	Mars	W.	47 37 39	2535	49 18 3	2538	50 58 23	2542	52 38 38	2545
	Venus	W.	34 22 9	2652	35 59 54	2656	37 37 34	2660	39 15 8	2663
	Jupiter	W.	24 46 21	2349	26 31 9	2352	28 15 53	2355	30 0 32	2359
	Saturn	E.	67 25 53	2294	65 39 45	2298	63 53 43	2302	62 7 47	2307
	Pollux	E.	80 2 27	2390	78 16 13	2394	76 30 4	2397	74 44 0	2300
	Regulus	E.	116 46 8	2294	115 0 0	2298	113 13 57	2301	111 27 59	2304

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Sun.	1	21 0 30.93	10.177	S. 17 1 25.1	42.92	16 15.94	68.23	13 55.56	0.321
Mon.	2	21 4 34.77	10.142	16 44 5.8	43.65	16 15.79	68.11	14 2.82	0.286
Tues.	3	21 8 37.77	10.107	16 26 29.2	44.37	16 15.64	68.00	14 9.24	0.251
Wed.	4	21 12 39.93	10.072	16 8 35.6	45.07	16 15.48	67.89	14 14.82	0.216
Thur.	5	21 16 41.26	10.037	15 50 25.5	45.75	16 15.31	67.77	14 19.58	0.181
Fri.	6	21 20 41.77	10.003	15 31 59.2	46.42	16 15.14	67.65	14 23.52	0.147
Sat.	7	21 24 41.46	9.970	15 13 17.1	47.07	16 14.97	67.54	14 26.64	0.113
Sun.	8	21 28 40.33	9.937	14 54 19.8	47.69	16 14.80	67.43	14 28.95	0.080
Mon.	9	21 32 38.40	9.904	14 35 7.5	48.31	16 14.62	67.32	14 30.47	0.047
Tues.	10	21 36 35.69	9.871	14 15 40.6	48.91	16 14.44	67.21	14 31.20	0.015
Wed.	11	21 40 32.20	9.839	13 55 59.6	49.49	16 14.25	67.10	14 31.16	0.017
Thur.	12	21 44 27.96	9.808	13 36 4.8	50.06	16 14.05	66.99	14 30.36	0.049
Fri.	13	21 48 22.97	9.777	13 15 56.7	50.61	16 13.85	66.88	14 28.81	0.079
Sat.	14	21 52 17.24	9.747	12 55 35.5	51.14	16 13.64	66.78	14 26.53	0.109
Sun.	15	21 56 10.81	9.717	12 35 1.7	51.66	16 13.43	66.68	14 23.54	0.139
Mon.	16	22 0 3.64	9.688	12 14 15.8	52.16	16 13.22	66.57	14 19.84	0.168
Tues.	17	22 3 55.79	9.659	11 53 18.1	52.64	16 13.00	66.47	14 15.45	0.197
Wed.	18	22 7 47.25	9.631	11 32 9.0	53.11	16 12.78	66.37	14 10.37	0.225
Thur.	19	22 11 38.05	9.604	11 10 48.9	53.56	16 12.56	66.27	14 4.62	0.253
Fri.	20	22 15 28.18	9.576	10 49 18.3	53.99	16 12.34	66.18	13 58.22	0.280
Sat.	21	22 19 17.67	9.550	10 27 37.6	54.40	16 12.11	66.09	13 51.17	0.307
Sun.	22	22 23 6.52	9.524	10 5 47.2	54.79	16 11.88	66.00	13 43.49	0.333
Mon.	23	22 26 54.75	9.498	9 43 47.4	55.17	16 11.65	65.90	13 35.19	0.358
Tues.	24	22 30 42.37	9.473	9 21 38.8	55.53	16 11.42	65.81	13 26.29	0.383
Wed.	25	22 34 29.40	9.449	8 59 21.9	55.87	16 11.19	65.73	13 16.79	0.408
Thur.	26	22 38 15.84	9.425	8 36 57.0	56.20	16 10.96	65.65	13 6.71	0.432
Fri.	27	22 42 1.72	9.401	8 14 24.5	56.51	16 10.72	65.57	12 56.06	0.455
Sat.	28	22 45 47.05	9.379	7 51 44.9	56.79	16 10.48	65.49	12 44.85	0.478
Sun.	29	22 49 31.83	9.356	S. 7 28 58.6	57.06	16 10.24	65.41	12 33.10	0.500

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Sun.	1	21 0 28.57	10.177	S.17 1 35.1	42.92	13 55.48	0.321	20 46 33.09
Mon.	2	21 4 32.40	10.142	16 44 16.1	43.65	14 2.75	0.286	20 50 29.65
Tues.	3	21 8 35.39	10.107	16 26 39.7	44.37	14 9.18	0.251	20 54 26.21
Wed.	4	21 12 37.54	10.072	16 8 46.3	45.07	14 14.77	0.216	20 58 22.77
Thur.	5	21 16 38.86	10.037	15 50 36.4	45.75	14 19.53	0.181	21 2 19.33
Fri.	6	21 20 39.37	10.003	15 32 10.3	46.42	14 23.48	0.147	21 6 15.89
Sat.	7	21 24 39.05	9.970	15 13 28.4	47.07	14 26.61	0.113	21 10 12.44
Sun.	8	21 28 37.93	9.937	14 54 31.3	47.69	14 28.93	0.080	21 14 9.00
Mon.	9	21 32 36.00	9.904	14 35 19.2	48.31	14 30.45	0.047	21 18 5.55
Tues.	10	21 36 33.30	9.871	14 15 52.5	48.91	14 31.19	0.015	21 22 2.11
Wed.	11	21 40 29.82	9.839	13 56 11.6	49.49	14 31.16	0.017	21 25 58.66
Thur.	12	21 44 25.59	9.808	13 36 16.0	50.06	14 30.37	0.049	21 29 55.22
Fri.	13	21 48 20.61	9.777	13 16 8.9	50.61	14 28.83	0.079	21 33 51.78
Sat.	14	21 52 14.89	9.747	12 55 47.8	51.14	14 26.56	0.109	21 37 48.33
Sun.	15	21 56 8.46	9.717	12 35 14.1	51.66	14 23.57	0.139	21 41 44.89
Mon.	16	22 0 1.32	9.688	12 14 28.3	52.16	14 19.88	0.168	21 45 41.44
Tues.	17	22 3 53.49	9.659	11 53 30.7	52.64	14 15.49	0.197	21 49 38.00
Wed.	18	22 7 44.97	9.631	11 32 21.6	53.11	14 10.42	0.225	21 53 34.55
Thur.	19	22 11 35.79	9.604	11 11 1.5	53.56	14 4.68	0.253	21 57 31.11
Fri.	20	22 15 25.94	9.576	10 49 30.8	53.99	13 58.28	0.280	22 1 27.66
Sat.	21	22 19 15.46	9.550	10 27 50.0	54.40	13 51.24	0.307	22 5 24.22
Sun.	22	22 23 4.34	9.524	10 5 59.6	54.79	13 43.57	0.333	22 9 20.77
Mon.	23	22 26 52.60	9.498	9 43 59.8	55.17	13 35.27	0.358	22 13 17.33
Tues.	24	22 30 40.25	9.473	9 21 51.2	55.53	13 26.37	0.383	22 17 13.88
Wed.	25	22 34 27.31	9.449	8 59 34.2	55.87	13 16.88	0.408	22 21 10.43
Thur.	26	22 38 13.78	9.425	8 37 9.2	56.20	13 6.80	0.432	22 25 6.98
Fri.	27	22 41 59.69	9.401	8 14 36.6	56.51	12 56.15	0.455	22 29 3.54
Sat.	28	22 45 45.05	9.378	7 51 56.9	56.79	12 44.95	0.478	22 33 0.10
Sun.	29	22 49 29.85	9.356	S. 7 29 10.5	57.06	12 33.20	0.500	22 36 56.65

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	32	312 39 20.5	39 17.4	152.15	+0.31	9.9937557	27.0	3 12 55.22
2	33	313 40 11.3	40 8.0	152.09	0.42	.9938214	27.8	3 8 59.31
3	34	314 41 0.7	40 57.3	152.03	0.51	.9938890	28.6	3 5 3.39
4	35	315 41 48.6	41 45.1	151.96	0.57	.9939586	29.4	3 1 7.48
5	36	316 42 35.0	42 31.3	151.90	0.61	.9940304	30.4	2 57 11.57
6	37	317 43 19.9	43 16.1	151.84	0.62	.9941044	31.3	2 53 15.66
7	38	318 44 3.3	43 59.3	151.78	0.59	.9941807	32.2	2 49 19.75
8	39	319 44 45.3	44 41.1	151.72	0.54	.9942592	33.2	2 45 23.84
9	40	320 45 26.0	45 21.7	151.67	0.46	.9943401	34.2	2 41 27.93
10	41	321 46 5.3	46 0.9	151.61	0.35	.9944233	35.1	2 37 32.02
11	42	322 46 43.3	46 38.8	151.55	0.23	.9945088	36.1	2 33 36.11
12	43	323 47 19.9	47 15.2	151.50	+0.09	.9945965	37.0	2 29 40.20
13	44	324 47 55.3	47 50.5	151.44	—0.06	.9946863	37.8	2 25 44.28
14	45	325 48 29.4	48 24.4	151.39	0.18	.9947779	38.6	2 21 48.37
15	46	326 49 2.3	48 57.1	151.34	0.30	.9948715	39.3	2 17 52.46
16	47	327 49 33.9	49 28.6	151.29	0.42	.9949666	39.9	2 13 56.55
17	48	328 50 4.2	49 58.8	151.24	0.50	.9950633	40.6	2 10 0.64
18	49	329 50 33.3	50 27.8	151.18	0.57	.9951615	41.2	2 6 4.73
19	50	330 51 1.1	50 55.4	151.13	0.59	.9952607	41.6	2 2 8.82
20	51	331 51 27.4	51 21.6	151.07	0.59	.9953610	42.0	1 58 12.91
21	52	332 51 52.3	51 46.4	151.01	0.57	.9954622	42.3	1 54 17.00
22	53	333 52 15.6	52 9.5	150.94	0.51	.9955643	42.7	1 50 21.09
23	54	334 52 37.3	52 31.1	150.87	0.43	.9956671	43.0	1 46 25.18
24	55	335 52 57.3	52 51.0	150.80	0.32	.9957707	43.3	1 42 29.28
25	56	336 53 15.6	53 9.2	150.73	0.20	.9958748	43.6	1 38 33.37
26	57	337 53 32.1	53 25.5	150.65	—0.08	.9959795	43.9	1 34 37.47
27	58	338 53 46.7	53 40.0	150.57	+0.05	.9960849	44.1	1 30 41.56
28	59	339 53 59.3	53 52.5	150.48	0.17	.9961910	44.3	1 26 45.65
29	60	340 54 9.9	54 3.0	150.39	+0.28	9.9962978	44.7	1 22 49.74

Note.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	16 9.7	16 7.9	59 12.4	–0.49	59 5.9	–0.58	5 45.0	2.20	6.5
2	16 5.9	16 3.7	58 58.5	0.65	58 50.3	0.72	6 39.4	2.34	7.5
3	16 1.3	15 58.7	58 41.3	0.78	58 31.5	0.84	7 37.2	2.46	8.5
4	15 55.8	15 52.7	58 21.0	0.90	58 9.8	0.96	8 37.4	2.51	9.5
5	15 49.4	15 45.9	57 57.8	1.02	57 45.2	1.08	9 37.8	2.48	10.5
6	15 52.3	15 38.5	57 31.8	1.14	57 17.8	1.19	10 36.1	2.35	11.5
7	15 34.5	15 30.4	57 3.2	1.24	56 48.1	1.27	11 30.5	2.18	12.5
8	15 26.2	15 21.9	56 32.6	1.30	56 17.0	1.31	12 20.4	1.99	13.5
9	15 17.6	15 13.4	56 1.3	1.30	55 45.7	1.27	13 6.2	1.84	14.5
10	15 9.3	15 5.4	55 30.6	1.23	55 16.2	1.17	13 48.8	1.73	15.5
11	15 1.7	14 58.3	55 2.6	1.09	54 50.1	0.98	14 29.0	1.66	16.5
12	14 55.3	14 52.7	54 39.0	0.86	54 29.5	0.72	15 8.5	1.66	17.5
13	14 50.6	14 49.1	54 21.3	0.56	54 16.1	–0.38	15 48.7	1.69	18.5
14	14 48.0	14 47.7	54 12.6	–0.19	54 11.4	+0.00	16 29.8	1.76	19.5
15	14 48.1	14 49.2	54 12.7	+0.21	54 16.5	0.43	17 13.2	1.88	20.5
16	14 51.0	14 53.4	54 22.9	0.64	54 31.9	0.85	17 59.8	2.02	21.5
17	14 56.5	15 0.3	54 43.4	1.06	54 57.5	1.27	18 50.0	2.16	22.5
18	15 4.8	15 9.9	55 14.0	1.46	55 32.7	1.64	19 43.6	2.28	23.5
19	15 15.5	15 21.6	55 53.4	1.80	56 15.9	1.93	20 39.6	2.35	24.5
20	15 28.1	15 34.9	57 39.8	2.03	57 4.6	2.09	21 36.4	2.35	25.5
21	15 41.8	15 48.7	57 30.0	2.12	57 55.4	2.09	22 32.3	2.29	26.5
22	15 55.5	16 2.0	58 20.3	2.03	58 44.0	1.91	23 26.3	2.20	27.5
23	16 8.0	16 13.4	59 6.1	1.75	59 26.0	1.54	☌		28.5
24	16 18.1	16 22.0	59 43.2	1.30	59 57.3	1.04	0 18.1	2.12	0.0
25	16 24.9	16 26.8	60 8.1	0.75	60 15.3	+0.45	1 8.2	2.08	1.0
26	16 27.8	16 27.9	60 19.0	+0.16	60 19.0	–0.13	1 57.7	2.07	2.0
27	16 27.0	16 25.2	60 15.7	–0.40	60 9.3	0.65	2 47.8	2.12	3.0
28	16 22.7	16 19.6	60 0.2	0.86	59 48.7	1.04	3 39.7	2.22	4.0
29	16 15.9	16 11.8	59 35.2	–1.18	59 20.1	–1.29	4 34.4	2.34	5.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	2 19 25.42	2.2545	N.16 40 12.7	14.088
1	2 21 40.84	2.2594	16 54 15.1	13.992
2	2 23 56.55	2.2643	17 8 11.7	13.895
3	2 26 12.56	2.2693	17 22 2.5	13.796
4	2 28 28.87	2.2744	17 35 47.2	13.695
5	2 30 45.49	2.2795	17 49 25.8	13.592
6	2 33 2.41	2.2846	18 2 58.2	13.487
7	2 35 19.64	2.2898	18 16 24.3	13.382
8	2 37 37.18	2.2950	18 29 44.0	13.275
9	2 39 55.04	2.3002	18 42 57.3	13.167
10	2 42 13.21	2.3055	18 56 4.0	13.057
11	2 44 31.70	2.3108	19 9 4.1	12.945
12	2 46 50.51	2.3161	19 21 57.5	12.832
13	2 49 9.64	2.3215	19 34 44.0	12.717
14	2 51 29.09	2.3268	19 47 23.5	12.601
15	2 53 48.86	2.3322	19 59 56.1	12.483
16	2 56 8.05	2.3376	20 12 21.5	12.363
17	2 58 29.37	2.3431	20 24 39.7	12.242
18	3 0 50.12	2.3485	20 36 50.6	12.120
19	3 3 11.19	2.3539	20 48 54.1	11.997
20	3 5 32.59	2.3594	21 0 50.2	11.872
21	3 7 54.32	2.3649	21 12 38.7	11.745
22	3 10 16.38	2.3703	21 24 19.6	11.617
23	3 12 38.76	2.3757	N.21 35 52.7	11.487

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 15 1.47	2.3812	N.21 47 18.0	11.356
1	3 17 24.51	2.3867	21 58 35.4	11.223
2	3 19 47.88	2.3922	22 9 44.8	11.089
3	3 22 11.57	2.3976	22 20 46.1	10.953
4	3 24 35.59	2.4030	22 31 39.2	10.816
5	3 26 59.93	2.4084	22 42 24.1	10.678
6	3 29 24.60	2.4138	22 53 0.6	10.538
7	3 31 49.59	2.4192	23 3 28.7	10.396
8	3 34 14.90	2.4245	23 13 48.2	10.253
9	3 36 40.53	2.4298	23 23 59.1	10.110
10	3 39 6.48	2.4352	23 34 1.4	9.966
11	3 41 32.75	2.4405	23 43 55.0	9.820
12	3 43 59.34	2.4457	23 53 39.8	9.672
13	3 46 26.24	2.4508	24 3 15.6	9.522
14	3 48 53.44	2.4559	24 12 42.4	9.372
15	3 51 20.95	2.4610	24 22 0.1	9.218
16	3 53 48.76	2.4660	24 31 8.6	9.065
17	3 56 16.87	2.4710	24 40 7.9	8.910
18	3 58 45.28	2.4760	24 48 57.9	8.754
19	4 1 13.99	2.4809	24 57 38.5	8.597
20	4 3 42.99	2.4857	25 6 9.6	8.440
21	4 6 12.27	2.4904	25 14 31.3	8.281
22	4 8 41.83	2.4950	25 22 43.4	8.121
23	4 11 11.67	2.4996	25 30 45.8	7.959
24	4 13 41.78	2.5041	N.25 38 38.5	7.796

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	4 13 41.78	2.5041	N.25 38 38.5	7.796
1	4 16 12.16	2.5086	25 46 21.4	7.632
2	4 18 42.81	2.5130	25 53 54.4	7.467
3	4 21 13.72	2.5172	26 1 17.5	7.301
4	4 23 44.88	2.5213	26 8 30.6	7.137
5	4 26 16.28	2.5253	26 15 33.6	6.966
6	4 28 47.92	2.5293	26 22 26.5	6.797
7	4 31 19.80	2.5332	26 29 9.2	6.627
8	4 33 51.91	2.5371	26 35 41.7	6.456
9	4 36 24.25	2.5408	26 42 3.9	6.284
10	4 38 56.81	2.5444	26 48 15.8	6.111
11	4 41 29.58	2.5478	26 54 17.3	5.937
12	4 44 2.55	2.5512	27 0 8.3	5.762
13	4 46 35.72	2.5544	27 5 48.8	5.587
14	4 49 9.08	2.5576	27 11 18.8	5.411
15	4 51 42.63	2.5606	27 16 38.2	5.234
16	4 54 16.35	2.5634	27 21 46.9	5.057
17	4 56 50.24	2.5661	27 26 45.0	4.879
18	4 59 24.29	2.5687	27 31 32.4	4.700
19	5 1 58.49	2.5712	27 36 9.0	4.520
20	5 4 32.84	2.5736	27 40 34.8	4.340
21	5 7 7.33	2.5759	27 44 49.8	4.160
22	5 9 41.95	2.5780	27 48 54.0	3.979
23	5 12 16.69	2.5799	N.27 52 47.3	3.797

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 14 51.54	2.5817	N.27 56 29.6	3.614
1	5 17 26.49	2.5833	28 0 1.0	3.432
2	5 20 1.54	2.5848	28 3 21.4	3.249
3	5 22 36.68	2.5862	28 6 30.9	3.066
4	5 25 11.89	2.5874	28 9 29.4	2.882
5	5 27 47.17	2.5885	28 12 16.8	2.697
6	5 30 22.52	2.5895	28 14 53.1	2.513
7	5 32 57.92	2.5903	28 17 18.4	2.329
8	5 35 33.36	2.5909	28 19 32.6	2.144
9	5 38 8.83	2.5914	28 21 35.7	1.959
10	5 40 44.33	2.5917	28 23 27.7	1.775
11	5 43 19.84	2.5918	28 25 8.7	1.591
12	5 45 55.35	2.5918	28 26 38.6	1.406
13	5 48 30.86	2.5916	28 27 57.4	1.221
14	5 51 6.35	2.5913	28 29 5.1	1.035
15	5 53 41.82	2.5908	28 30 1.6	0.849
16	5 56 17.26	2.5902	28 30 47.0	0.664
17	5 58 52.65	2.5894	28 31 21.4	0.480
18	6 1 27.99	2.5685	28 31 44.7	0.296
19	6 4 3.27	2.5874	28 31 56.9	0.112
20	6 6 38.48	2.5861	28 31 58.1	0.072
21	6 9 13.61	2.5847	28 31 48.3	0.256
22	6 11 48.65	2.5831	28 31 27.4	0.440
23	6 14 23.59	2.5814	28 30 55.5	0.623
24	6 16 58.42	2.5795	N.28 30 12.6	0.806

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h.	m.	s.	s.	°	′	″	″
0	6	16	58.42	2.5795	N.28	30	12.6	0.806
1	6	19	33.13	2.5774	28	29	18.8	0.988
2	6	22	7.71	2.5752	28	28	14.1	1.170
3	6	24	42.16	2.5729	28	26	58.4	1.351
4	6	27	16.47	2.5704	28	25	31.9	1.532
5	6	29	50.62	2.5677	28	23	54.6	1.712
6	6	32	24.60	2.5649	28	22	6.5	1.891
7	6	34	58.41	2.5620	28	20	7.7	2.070
8	6	37	32.04	2.5589	28	17	58.1	2.249
9	6	40	5.48	2.5556	28	15	37.8	2.427
10	6	42	38.72	2.5522	28	13	6.9	2.604
11	6	45	11.75	2.5487	28	10	25.4	2.780
12	6	47	44.57	2.5450	28	7	33.3	2.955
13	6	50	17.16	2.5412	28	4	30.8	3.129
14	6	52	49.52	2.5373	28	1	17.8	3.303
15	6	55	21.64	2.5332	27	57	54.4	3.476
16	6	57	53.51	2.5290	27	54	20.7	3.647
17	7	0	25.13	2.5247	27	50	36.7	3.818
18	7	2	56.48	2.5202	27	46	42.5	3.988
19	7	5	27.56	2.5157	27	42	38.1	4.157
20	7	7	58.36	2.5110	27	38	23.6	4.325
21	7	10	28.88	2.5062	27	33	59.1	4.492
22	7	12	59.11	2.5013	27	29	24.7	4.658
23	7	15	29.04	2.4962	N.27	24	40.2	4.823

FRIDAY 6.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h.	m.	s.	s.	°	′	″	″
0	7	17	58.66	2.4910	N.27	19	45.9	4.987
1	7	20	27.97	2.4858	27	14	41.8	5.149
2	7	22	56.96	2.4805	27	9	28.0	5.310
3	7	25	25.63	2.4751	27	4	4.6	5.470
4	7	27	53.97	2.4695	26	58	31.6	5.629
5	7	30	21.97	2.4638	26	52	49.1	5.787
6	7	32	49.62	2.4580	26	46	57.1	5.944
7	7	35	16.93	2.4522	26	40	55.8	6.099
8	7	37	43.88	2.4463	26	34	45.2	6.253
9	7	40	10.48	2.4403	26	28	25.4	6.405
10	7	42	36.72	2.4342	26	21	56.6	6.555
11	7	45	2.59	2.4280	26	15	18.8	6.705
12	7	47	28.08	2.4218	26	8	32.0	6.854
13	7	49	53.20	2.4155	26	1	36.3	7.001
14	7	52	17.94	2.4091	25	54	31.9	7.147
15	7	54	42.29	2.4027	25	47	18.7	7.292
16	7	57	6.26	2.3962	25	39	56.9	7.435
17	7	59	29.83	2.3896	25	32	26.6	7.576
18	8	1	53.01	2.3830	25	24	47.8	7.716
19	8	4	15.79	2.3763	25	17	0.7	7.855
20	8	6	38.17	2.3696	25	9	5.3	7.992
21	8	9	0.14	2.3629	25	1	1.7	8.127
22	8	11	21.71	2.3561	24	52	50.0	8.261
23	8	13	42.87	2.3492	24	44	30.3	8.394
24	8	16	3.61	2.3422	N.24	36	2.7	8.526

SATURDAY 7.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h.	m.	s.	s.	°	′	″	″
0	8	16	3.61	2.3422	N.24	36	2.7	8.526
1	8	18	23.94	2.3353	24	27	27.2	8.656
2	8	20	43.85	2.3284	24	18	44.0	8.784
3	8	23	3.35	2.3215	24	9	53.2	8.910
4	8	25	22.43	2.3145	24	0	54.8	9.036
5	8	27	41.09	2.3074	23	51	48.9	9.160
6	8	29	59.32	2.3003	23	42	35.6	9.282
7	8	32	17.13	2.2932	23	33	15.1	9.402
8	8	34	34.51	2.2861	23	23	47.4	9.521
9	8	36	51.47	2.2790	23	14	12.6	9.638
10	8	39	8.00	2.2719	23	4	30.8	9.754
11	8	41	24.10	2.2648	22	54	42.1	9.868
12	8	43	39.78	2.2577	22	44	46.5	9.981
13	8	45	55.03	2.2506	22	34	44.2	10.093
14	8	48	9.86	2.2435	22	24	35.3	10.203
15	8	50	24.26	2.2364	22	14	19.8	10.311
16	8	52	38.23	2.2293	22	3	57.9	10.418
17	8	54	51.78	2.2222	21	53	29.6	10.523
18	8	57	4.90	2.2151	21	42	55.1	10.627
19	8	59	17.59	2.2080	21	32	14.4	10.729
20	9	1	29.86	2.2009	21	21	27.6	10.830
21	9	3	41.71	2.1939	21	10	34.8	10.929
22	9	5	53.14	2.1869	20	59	36.1	11.026
23	9	8	4.14	2.1799	N.20	48	31.6	11.122

SUNDAY 8.

Hour.	Right Ascension.			Diff. for 1 m.	Declination.			Diff. for 1 m.
	h.	m.	s.	s.	°	′	″	″
0	9	10	14.72	2.1729	N.20	37	21.4	11.217
1	9	12	24.89	2.1660	20	26	5.5	11.310
2	9	14	34.64	2.1591	20	14	44.1	11.402
3	9	16	43.98	2.1522	20	3	17.3	11.492
4	9	18	52.91	2.1454	19	51	45.1	11.581
5	9	21	1.43	2.1385	19	40	7.6	11.668
6	9	23	9.53	2.1317	19	28	24.9	11.753
7	9	25	17.23	2.1249	19	16	37.2	11.837
8	9	27	24.52	2.1182	19	4	44.5	11.920
9	9	29	31.41	2.1115	18	52	46.8	12.001
10	9	31	37.90	2.1048	18	40	44.3	12.080
11	9	33	43.99	2.0982	18	28	37.1	12.158
12	9	35	49.68	2.0916	18	16	25.3	12.235
13	9	37	54.98	2.0851	18	4	8.9	12.310
14	9	39	59.89	2.0786	17	51	48.0	12.384
15	9	42	4.41	2.0721	17	39	22.7	12.457
16	9	44	8.54	2.0657	17	26	53.1	12.528
17	9	46	12.29	2.0594	17	14	19.3	12.598
18	9	48	15.67	2.0531	17	1	41.3	12.667
19	9	50	18.67	2.0469	16	48	59.2	12.734
20	9	52	21.30	2.0408	16	36	13.2	12.799
21	9	54	23.56	2.0347	16	23	23.3	12.863
22	9	56	25.46	2.0286	16	10	29.6	12.926
23	9	58	26.99	2.0226	15	57	32.1	12.988
24	10	0	28.16	2.0166	N.15	44	31.0	13.048

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 9.					WEDNESDAY 11.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	10 0 28.16	2.0166	N.15 44 31.0	13.048	0	11 31 39.29	1.8101	N. 4 32 5.9	14.547
1	10 2 28.98	2.0107	15 31 26.3	13.107	1	11 33 27.82	1.8076	4 17 32.9	14.552
2	10 4 29.44	2.0048	15 18 18.1	13.165	2	11 35 16.20	1.8051	4 2 59.6	14.557
3	10 6 29.55	1.9990	15 5 6.5	13.221	3	11 37 4.43	1.8027	3 48 26.0	14.562
4	10 8 29.32	1.9933	14 51 51.6	13.275	4	11 38 52.52	1.8004	3 33 52.2	14.565
5	10 10 28.75	1.9877	14 38 33.5	13.328	5	11 40 40.48	1.7982	3 19 18.2	14.567
6	10 12 27.84	1.9821	14 25 12.2	13.381	6	11 42 28.31	1.7961	3 4 44.1	14.569
7	10 14 26.60	1.9766	14 11 47.8	13.432	7	11 44 16.01	1.7940	2 50 9.9	14.570
8	10 16 25.03	1.9711	13 58 20.4	13.482	8	11 46 3.59	1.7920	2 35 35.7	14.570
9	10 18 23.14	1.9657	13 44 50.0	13.531	9	11 47 51.05	1.7901	2 21 1.5	14.569
10	10 20 20.92	1.9604	13 31 16.7	13.578	10	11 49 38.40	1.7882	2 6 27.4	14.567
11	10 22 18.38	1.9551	13 17 40.6	13.624	11	11 51 25.64	1.7865	1 51 53.4	14.565
12	10 24 15.53	1.9499	13 4 1.8	13.668	12	11 53 12.78	1.7848	1 37 19.6	14.562
13	10 26 12.37	1.9448	12 50 20.4	13.712	13	11 54 59.82	1.7832	1 22 46.0	14.557
14	10 28 8.91	1.9398	12 36 36.4	13.754	14	11 56 46.76	1.7816	1 8 12.7	14.552
15	10 30 5.15	1.9348	12 22 49.9	13.796	15	11 58 33.61	1.7802	0 53 39.7	14.547
16	10 32 1.09	1.9298	12 9 0.9	13.836	16	12 0 20.38	1.7788	0 39 7.1	14.540
17	10 33 56.73	1.9249	11 55 9.6	13.874	17	12 2 7.07	1.7775	0 24 34.9	14.532
18	10 35 52.08	1.9201	11 41 16.0	13.912	18	12 3 53.68	1.7762	N. 0 10 3.2	14.524
19	10 37 47.15	1.9154	11 27 20.1	13.949	19	12 5 40.21	1.7749	S. 0 4 28.0	14.515
20	10 39 41.94	1.9107	11 13 22.1	13.984	20	12 7 26.67	1.7738	0 18 58.6	14.506
21	10 41 36.44	1.9061	10 59 22.0	14.018	21	12 9 13.07	1.7728	0 33 28.7	14.496
22	10 43 30.67	1.9016	10 45 19.9	14.051	22	12 10 59.41	1.7719	0 47 58.1	14.484
23	10 45 24.64	1.8972	N.10 31 15.9	14.083	23	12 12 45.70	1.7711	S. 1 2 26.8	14.472
	TUESDAY 10.					THURSDAY 12.			
0	10 47 18.34	1.8929	N.10 17 10.0	14.114	0	12 14 31.94	1.7708	S. 1 16 54.7	14.458
1	10 49 11.78	1.8886	10 3 2.2	14.144	1	12 16 18.13	1.7695	1 31 21.8	14.444
2	10 51 4.97	1.8844	9 48 52.6	14.173	2	12 18 4.28	1.7688	1 45 48.0	14.430
3	10 52 57.91	1.8802	9 34 41.4	14.200	3	12 19 50.40	1.7682	2 0 13.4	14.415
4	10 54 50.60	1.8761	9 20 28.6	14.226	4	12 21 36.48	1.7677	2 14 37.8	14.399
5	10 56 43.04	1.8720	9 6 14.3	14.251	5	12 23 22.53	1.7673	2 29 1.2	14.382
6	10 58 35.24	1.8681	8 51 58.5	14.276	6	12 25 8.56	1.7670	2 43 23.7	14.365
7	11 0 27.21	1.8642	8 37 41.2	14.300	7	12 26 54.57	1.7668	2 57 45.1	14.347
8	11 2 18.95	1.8605	8 23 22.5	14.322	8	12 28 40.57	1.7666	3 12 5.3	14.328
9	11 4 10.47	1.8568	8 9 2.5	14.343	9	12 30 26.56	1.7664	3 26 24.4	14.308
10	11 6 1.77	1.8532	7 54 41.3	14.363	10	12 32 12.54	1.7663	3 40 42.3	14.288
11	11 7 52.85	1.8496	7 40 18.9	14.383	11	12 33 58.52	1.7663	3 54 59.0	14.267
12	11 9 43.72	1.8461	7 25 55.3	14.402	12	12 35 44.50	1.7664	4 9 14.4	14.246
13	11 11 34.38	1.8427	7 11 30.6	14.419	13	12 37 30.49	1.7665	4 23 28.5	14.223
14	11 13 24.84	1.8394	6 57 5.0	14.435	14	12 39 16.49	1.7667	4 37 41.2	14.200
15	11 15 15.11	1.8362	6 42 38.4	14.451	15	12 41 2.50	1.7670	4 51 52.5	14.176
16	11 17 5.18	1.8330	6 28 10.9	14.465	16	12 42 48.53	1.7674	5 6 2.3	14.151
17	11 18 55.06	1.8298	6 13 42.6	14.478	17	12 44 34.59	1.7679	5 20 10.6	14.126
18	11 20 44.75	1.8267	5 59 13.5	14.491	18	12 46 20.68	1.7684	5 34 17.4	14.100
19	11 22 34.26	1.8237	5 44 43.7	14.502	19	12 48 6.80	1.7690	5 48 22.6	14.073
20	11 24 23.60	1.8209	5 30 13.3	14.512	20	12 49 52.96	1.7697	6 2 26.2	14.046
21	11 26 12.77	1.8181	5 15 42.3	14.522	21	12 51 39.16	1.7704	6 16 28.1	14.017
22	11 28 1.77	1.8154	5 1 10.7	14.532	22	12 53 25.41	1.7712	6 30 28.3	13.988
23	11 29 50.61	1.8127	4 46 38.5	14.540	23	12 55 11.71	1.7721	6 44 26.7	13.958
24	11 31 39.29	1.8101	N. 4 32 5.9	14.547	24	12 56 58.06	1.7730	S. 6 58 23.3	13.928

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 13.					SUNDAY 15.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	12 56 58.06	1.7730	S. 6 58 23.3	13.928	0	14 24 28.53	1.8986	S.17 18 34.5	11.630
1	12 58 44.46	1.7740	7 12 18.1	13.898	1	14 26 22.57	1.9028	17 30 10.3	11.563
2	13 0 30.93	1.7751	7 26 11.1	13.867	2	14 28 16.86	1.9070	17 41 42.1	11.497
3	13 2 17.47	1.7763	7 40 2.2	13.835	3	14 30 11.41	1.9113	17 53 9.9	11.429
4	13 4 4.08	1.7775	7 53 51.3	13.801	4	14 32 6.22	1.9157	18 4 33.6	11.360
5	13 5 50.77	1.7788	8 7 38.3	13.767	5	14 34 1.29	1.9201	18 15 53.1	11.290
6	13 7 37.54	1.7802	8 21 23.3	13.732	6	14 35 56.63	1.9246	18 27 8.4	11.219
7	13 9 24.39	1.7816	8 35 6.2	13.697	7	14 37 52.24	1.9291	18 38 19.4	11.147
8	13 11 11.33	1.7831	8 48 47.0	13.662	8	14 39 48.12	1.9336	18 49 26.1	11.075
9	13 12 58.36	1.7847	9 2 25.6	13.625	9	14 41 44.27	1.9382	19 0 28.5	11.002
10	13 14 45.49	1.7864	9 16 2.0	13.587	10	14 43 40.70	1.9429	19 11 26.4	10.927
11	13 16 32.72	1.7881	9 29 36.1	13.549	11	14 45 37.41	1.9476	19 22 19.8	10.852
12	13 18 20.06	1.7898	9 43 7.9	13.511	12	14 47 34.41	1.9523	19 33 8.7	10.777
13	13 20 7.50	1.7917	9 56 37.4	13.472	13	14 49 31.69	1.9571	19 43 53.1	10.700
14	13 21 55.06	1.7937	10 10 4.5	13.431	14	14 51 29.26	1.9620	19 54 32.8	10.622
15	13 23 42.74	1.7957	10 23 29.1	13.390	15	14 53 27.13	1.9669	20 5 7.8	10.544
16	13 25 30.54	1.7977	10 36 51.3	13.348	16	14 55 25.29	1.9718	20 15 38.1	10.466
17	13 27 18.47	1.7998	10 50 10.9	13.306	17	14 57 23.75	1.9768	20 26 3.7	10.386
18	13 29 6.53	1.8020	11 3 28.0	13.263	18	14 59 22.51	1.9818	20 36 24.5	10.305
19	13 30 54.72	1.8042	11 16 42.5	13.219	19	15 1 21.57	1.9869	20 46 40.3	10.222
20	13 32 43.04	1.8065	11 29 54.3	13.174	20	15 3 20.94	1.9920	20 56 51.1	10.139
21	13 34 31.50	1.8089	11 43 3.4	13.129	21	15 5 20.61	1.9972	21 6 57.0	10.056
22	13 36 20.11	1.8115	11 56 9.8	13.084	22	15 7 20.60	2.0024	21 16 57.8	9.971
23	13 38 8.88	1.8141	S.12 9 13.5	13.038	23	15 9 20.90	2.0076	S.21 26 53.5	9.886
	SATURDAY 14.					MONDAY 16.			
0	13 39 57.80	1.8167	S.12 22 14.4	12.991	0	15 11 21.51	2.0129	S.21 36 44.0	9.798
1	13 41 46.88	1.8194	12 35 12.4	12.942	1	15 13 22.44	2.0182	21 46 29.3	9.711
2	13 43 36.13	1.8221	12 48 7.5	12.893	2	15 15 23.69	2.0236	21 56 9.3	9.622
3	13 45 25.54	1.8249	13 0 59.6	12.843	3	15 17 25.27	2.0290	22 5 43.9	9.532
4	13 47 15.12	1.8278	13 13 48.7	12.793	4	15 19 27.17	2.0344	22 15 13.1	9.442
5	13 49 4.88	1.8308	13 26 34.8	12.742	5	15 21 29.40	2.0399	22 24 36.9	9.351
6	13 50 54.82	1.8338	13 39 17.8	12.691	6	15 23 31.96	2.0454	22 33 55.2	9.258
7	13 52 44.94	1.8369	13 51 57.7	12.639	7	15 25 34.85	2.0508	22 43 7.9	9.165
8	13 54 35.25	1.8401	14 4 34.5	12.586	8	15 27 38.06	2.0563	22 52 15.0	9.071
9	13 56 25.75	1.8432	14 17 8.1	12.532	9	15 29 41.60	2.0619	23 1 16.4	8.975
10	13 58 16.44	1.8464	14 29 38.4	12.477	10	15 31 45.48	2.0675	23 10 12.0	8.878
11	14 0 7.32	1.8497	14 42 5.4	12.422	11	15 33 49.70	2.0731	23 19 1.8	8.781
12	14 1 58.40	1.8531	14 54 29.0	12.365	12	15 35 54.26	2.0787	23 27 45.8	8.683
13	14 3 49.69	1.8566	15 6 49.2	12.308	13	15 37 59.16	2.0843	23 36 23.8	8.583
14	14 5 41.19	1.8601	15 19 6.0	12.251	14	15 40 4.39	2.0899	23 44 55.8	8.483
15	14 7 32.90	1.8637	15 31 19.3	12.193	15	15 42 9.95	2.0955	23 53 21.8	8.382
16	14 9 24.83	1.8674	15 43 29.1	12.133	16	15 44 15.85	2.1012	24 1 41.7	8.280
17	14 11 16.98	1.8711	15 55 35.3	12.073	17	15 46 22.10	2.1070	24 9 55.4	8.177
18	14 13 9.36	1.8749	16 7 37.9	12.012	18	15 48 28.70	2.1128	24 18 2.9	8.073
19	14 15 1.97	1.8787	16 19 36.8	11.950	19	15 50 35.64	2.1186	24 26 4.2	7.968
20	14 16 54.81	1.8826	16 31 32.0	11.888	20	15 52 42.93	2.1243	24 33 59.1	7.862
21	14 18 47.88	1.8865	16 43 23.4	11.825	21	15 54 50.56	2.1301	24 41 47.6	7.754
22	14 20 41.19	1.8905	16 55 11.0	11.761	22	15 56 58.54	2.1359	24 49 29.6	7.645
23	14 22 34.74	1.8945	17 6 54.7	11.696	23	15 59 6.87	2.1417	24 57 5.0	7.536
24	14 24 28.53	1.8986	S.17 18 34.5	11.630	24	16 1 15.54	2.1474	S.25 4 33.9	7.426

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 1 15.54	2.1474	S.25 4 33.9	7.426
1	16 3 24.56	2.1532	25 11 56.1	7.314
2	16 5 33.93	2.1590	25 19 11.6	7.201
3	16 7 43.64	2.1647	25 26 20.3	7.087
4	16 9 53.70	2.1705	25 33 22.1	6.973
5	16 12 4.10	2.1762	25 40 17.0	6.858
6	16 14 14.85	2.1820	25 47 5.1	6.742
7	16 16 25.94	2.1877	25 53 46.1	6.624
8	16 18 37.37	2.1934	26 0 20.0	6.504
9	16 20 49.15	2.1991	26 6 46.7	6.384
10	16 23 1.27	2.2048	26 13 6.2	6.263
11	16 25 13.73	2.2105	26 19 18.4	6.142
12	16 27 26.53	2.2162	26 25 23.3	6.020
13	16 29 39.67	2.2217	26 31 20.8	5.896
14	16 31 53.14	2.2273	26 37 10.8	5.771
15	16 34 6.94	2.2329	26 42 53.3	5.646
16	16 36 21.08	2.2385	26 48 28.3	5.519
17	16 38 35.55	2.2441	26 53 55.6	5.391
18	16 40 50.37	2.2496	26 59 15.2	5.262
19	16 43 5.51	2.2550	27 4 27.0	5.132
20	16 45 20.97	2.2604	27 9 31.0	5.001
21	16 47 36.75	2.2657	27 14 27.1	4.869
22	16 49 52.85	2.2710	27 19 15.3	4.736
23	16 52 9.27	2.2763	S.27 23 55.5	4.602

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 54 26.01	2.2815	S.27 28 27.6	4.467
1	16 56 43.06	2.2867	27 32 51.6	4.332
2	16 59 0.42	2.2919	27 37 7.4	4.195
3	17 1 18.09	2.2970	27 41 15.0	4.057
4	17 3 36.06	2.3020	27 45 14.3	3.918
5	17 5 54.33	2.3070	27 49 5.2	3.778
6	17 8 12.90	2.3119	27 52 47.7	3.637
7	17 10 31.76	2.3167	27 56 21.7	3.496
8	17 12 50.91	2.3215	27 59 47.2	3.354
9	17 15 10.34	2.3262	28 3 4.2	3.211
10	17 17 30.05	2.3309	28 6 12.5	3.066
11	17 19 50.04	2.3355	28 9 12.1	2.921
12	17 22 10.31	2.3401	28 12 3.0	2.775
13	17 24 30.85	2.3445	28 14 45.1	2.628
14	17 26 51.65	2.3488	28 17 18.3	2.480
15	17 29 12.71	2.3531	28 19 42.7	2.332
16	17 31 34.02	2.3573	28 21 58.1	2.182
17	17 33 55.58	2.3614	28 24 4.5	2.032
18	17 36 17.39	2.3655	28 26 1.9	1.881
19	17 38 39.44	2.3695	28 27 50.2	1.729
20	17 41 1.73	2.3733	28 29 29.4	1.576
21	17 43 24.24	2.3770	28 30 59.4	1.423
22	17 45 46.97	2.3807	28 32 20 2	1.269
23	17 48 9.92	2.3843	28 33 31.7	1.114
24	17 50 33.09	2.3878	S.28 34 33.9	0.959

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 50 33.09	2.3878	S.28 34 33.9	0.959
1	17 52 56.47	2.3913	28 35 26.8	0.803
2	17 55 20.05	2.3946	28 36 10.3	0.646
3	17 57 43.82	2.3977	28 36 44.3	0.489
4	18 0 7.78	2.4009	28 37 8.9	0.331
5	18 2 31.93	2.4040	28 37 24.0	0.172
6	18 4 56.26	2.4069	28 37 29.5	0.012
7	18 7 20.76	2.4097	28 37 25.4	0.148
8	18 9 45.42	2.4124	28 37 11.7	0.308
9	18 12 10.24	2.4150	28 36 48.4	0.468
10	18 14 35.22	2.4176	28 36 15.5	0.629
11	18 17 0.35	2.4200	28 35 32.9	0.791
12	18 19 25.62	2.4222	28 34 40.5	0.954
13	18 21 51.02	2.4243	28 33 38.4	1.117
14	18 24 16.54	2.4264	28 32 26.5	1.281
15	18 26 42.19	2.4284	28 31 4.7	1.445
16	18 29 7.95	2.4302	28 29 33.1	1.609
17	18 31 33.82	2.4319	28 27 51.7	1.773
18	18 33 59.79	2.4336	28 26 0.4	1.937
19	18 36 25.85	2.4352	28 23 59.2	2.102
20	18 38 52.00	2.4366	28 21 48.1	2.267
21	18 41 18.24	2.4379	28 19 27.1	2.433
22	18 43 44.55	2.4391	28 16 56.2	2.599
23	18 46 10.93	2.4402	S.28 14 15.3	2.766

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 48 37.37	2.4411	S.28 11 24.3	2.932
1	18 51 3.86	2.4419	28 8 23.4	3.098
2	18 53 30.39	2.4426	28 5 12.5	3.264
3	18 55 56.97	2.4432	28 1 51.7	3.430
4	18 58 23.58	2.4437	27 58 20.9	3.597
5	19 0 50.21	2.4440	27 54 40.0	3.764
6	19 3 16.86	2.4443	27 50 49.1	3.931
7	19 5 43.53	2.4445	27 46 48.2	4.098
8	19 8 10.20	2.4445	27 42 37.3	4.265
9	19 10 36.87	2.4445	27 38 16.4	4.432
10	19 13 3.54	2.4443	27 33 45.5	4.598
11	19 15 30.19	2.4440	27 29 4.6	4.764
12	19 17 56.82	2.4436	27 24 13.8	4.931
13	19 20 23.42	2.4431	27 19 12.9	5.097
14	19 22 49.99	2.4125	27 14 2.1	5.263
15	19 25 16.52	2.4418	27 8 41.3	5.429
16	19 27 43.01	2.4411	27 3 10.6	5.595
17	19 30 9.45	2.4402	26 57 29.9	5.761
18	19 32 35.83	2.4391	26 51 39.3	5.926
19	19 35 2.14	2.4379	26 45 38.8	6.091
20	19 37 28 38	2.4367	26 39 28.4	6.255
21	19 39 54.55	2.4355	26 33 8.2	6.418
22	19 42 20.64	2.4342	26 26 38.2	6.582
23	19 44 46.65	2.4327	26 19 58.3	6.746
24	19 47 12.57	2.4311	S.26 13 8.6	6.909

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	19 47 12.57	2.4311	S.26 13 8.6	6.909
1	19 49 38.39	2.4294	26 6 9.2	7.071
2	19 52 4.10	2.4276	25 59 0.1	7.233
3	19 54 29.70	2.4257	25 51 41.2	7.395
4	19 56 55.19	2.4238	25 44 12.6	7.555
5	19 59 20.56	2.4217	25 36 34.5	7.714
6	20 1 45 80	2.4196	25 28 46.9	7.873
7	20 4 10.91	2.4174	25 20 49.8	8.032
8	20 6 35.89	2.4152	25 12 43.1	8.191
9	20 9 0.74	2.4130	25 4 26.9	8.349
10	20 11 25.45	2.4107	24 56 1.2	8.506
11	20 13 50.02	2.4082	24 47 26.1	8.662
12	20 16 14.44	2.4057	24 38 41.7	8.817
13	20 18 38.70	2.4030	24 29 48.0	8.972
14	20 21 2.80	2.4003	24 20 45.0	9.126
15	20 23 26.74	2.3975	24 11 32.8	9.279
16	20 25 50.51	2.3947	24 2 11.5	9.431
17	20 28 14.11	2.3919	23 52 41.1	9.582
18	20 30 37.54	2.3890	23 43 1.6	9.733
19	20 33 0.79	2.3860	23 33 13.1	9.883
20	20 35 23.86	2.3829	23 23 15.6	10.032
21	20 37 46.74	2.3798	23 13 9.2	10.180
22	20 40 9.44	2.3767	23 2 54.0	10.326
23	20 42 31.95	2.3736	S.22 52 30.1	10.471

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 44 54.27	2.3704	S.22 41 57.5	10.616
1	20 47 16.40	2.3672	22 31 16.2	10.760
2	20 49 38.33	2.3638	22 20 26.3	10.902
3	20 52 0.06	2.3605	22 9 27.9	11.044
4	20 54 21.59	2.3572	21 58 21.0	11.185
5	20 56 42.92	2.3538	21 47 5.7	11.324
6	20 59 4.05	2.3505	21 35 42.1	11.462
7	21 1 24.98	2.3471	21 24 10.2	11.599
8	21 3 45.70	2.3436	21 12 30.1	11.735
9	21 6 6.21	2.3401	21 0 41.9	11.869
10	21 8 26.51	2.3366	20 48 45.8	12.002
11	21 10 46.60	2.3331	20 36 41.7	12.134
12	21 13 6.48	2.3296	20 24 29.7	12.265
13	21 15 26.15	2.3260	20 12 9.9	12.395
14	21 17 45.60	2.3224	19 59 42.3	12.523
15	21 20 4.84	2.3188	19 47 7.1	12.650
16	21 22 23.86	2.3152	19 34 24.3	12.776
17	21 24 42.67	2.3117	19 21 34.0	12.901
18	21 27 1.27	2.3082	19 8 36.2	13.024
19	21 29 19.65	2.3046	18 55 31.1	13.146
20	21 31 37.82	2.3010	18 42 18.7	13.266
21	21 33 55.77	2.2974	18 28 59.1	13.385
22	21 36 13.51	2.2939	18 15 32.5	13.502
23	21 38 31.04	2.2904	18 1 58.9	13.618
24	21 40 48.36	2.2869	S.17 48 18.3	13.733

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	21 40 48.36	2.2869	S.17 48 18.3	13.733
1	21 43 5.47	2.2834	17 34 30.8	13.846
2	21 45 22.37	2.2799	17 20 36.6	13.958
3	21 47 39.06	2.2764	17 6 35.8	14.068
4	21 49 55.54	2.2729	16 52 28.4	14.177
5	21 52 11.81	2.2694	16 38 14.5	14.285
6	21 54 27.87	2.2659	16 23 54.2	14.391
7	21 56 43.72	2.2625	16 9 27.6	14.496
8	21 58 59.37	2.2592	15 54 54.8	14.598
9	22 1 14.82	2.2558	15 40 15.8	14.699
10	22 3 30.07	2.2525	15 25 30.8	14.799
11	22 5 45.12	2.2492	15 10 39.9	14.897
12	22 7 59.98	2.2460	14 55 43.1	14.993
13	22 10 14.64	2.2428	14 40 40.6	15.088
14	22 12 29.11	2.2397	14 25 32.5	15.181
15	22 14 43.40	2.2366	14 10 18.8	15.273
16	22 16 57.50	2.2335	13 54 59.7	15.363
17	22 19 11.42	2.2304	13 39 35.2	15.451
18	22 21 25.15	2.2273	13 24 5.5	15.538
19	22 23 38.70	2.2244	13 8 30.6	15.623
20	22 25 52.08	2.2215	12 52 50.0	15.706
21	22 28 5.28	2.2186	12 37 5.6	15.790
22	22 30 18.31	2.2157	12 21 15.8	15.870
23	22 32 31.17	2.2129	S.12 5 21.2	15.948

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 34 43.86	2.2102	S.11 49 21.9	16.025
1	22 36 56.39	2.2075	11 33 18.1	16.100
2	22 39 8.76	2.2049	11 17 9.9	16.173
3	22 41 20.98	2.2024	11 0 57.3	16.246
4	22 43 33.05	2.1999	10 44 40.4	16.316
5	22 45 44.97	2.1974	10 28 19.4	16.384
6	22 47 56.74	2.1949	10 11 54.3	16.451
7	22 50 8.36	2.1926	9 55 25.3	16.516
8	22 52 19.85	2.1904	9 38 52.4	16.580
9	22 54 31.21	2.1882	9 22 15.7	16.641
10	22 56 42.44	2.1861	9 5 35.4	16.701
11	22 58 53.54	2.1840	8 48 51.6	16.759
12	23 1 4.52	2.1820	8 32 4.3	16.815
13	23 3 15.38	2.1800	8 15 13.7	16.869
14	23 5 26.12	2.1780	7 58 19.9	16.922
15	23 7 36.74	2.1762	7 41 23.0	16.973
16	23 9 47.26	2.1745	7 24 23.1	17.022
17	23 11 57.68	2.1729	7 7 20.3	17.069
18	23 14 8.01	2.1713	6 50 14.7	17.114
19	23 16 18.24	2.1698	6 33 6.5	17.158
20	23 18 28.38	2.1684	6 15 55.7	17.201
21	23 20 38.44	2.1670	5 58 42.3	17.241
22	23 22 48.42	2.1656	5 41 26.6	17.280
23	23 24 58.32	2.1643	5 24 8.7	17.317
24	23 27 8.14	2.1631	S. 5 6 48.6	17.352

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 27 8.14	2.1631	S. 5 6 48.6	17.352
1	23 29 17.89	2.1620	4 49 26.4	17.386
2	23 31 27.58	2.1610	4 32 2.3	17.417
3	23 33 37.21	2.1601	4 14 36.4	17.446
4	23 35 46.79	2.1593	3 57 8.8	17.474
5	23 37 56.32	2.1585	3 39 39.5	17.501
6	23 40 5.81	2.1578	3 22 8.7	17.525
7	23 42 15.26	2.1571	3 4 36.5	17.547
8	23 44 24.67	2.1565	2 47 3.1	17.567
9	23 46 34.04	2.1559	2 29 28.5	17.585
10	23 48 43.38	2.1555	2 11 52.9	17.602
11	23 50 52.70	2.1552	1 54 16.3	17.617
12	23 53 2.01	2.1550	1 36 38.8	17.631
13	23 55 11.31	2.1549	1 19 0.6	17.642
14	23 57 20.61	2.1548	1 1 21.8	17.652
15	23 59 29.90	2.1548	0 43 42.4	17.660
16	0 1 39.19	2.1549	0 26 2.6	17.666
17	0 3 48.49	2.1551	S. 0 8 22.5	17.669
18	0 5 57.80	2.1554	N. 0 9 17.7	17.671
19	0 8 7.13	2.1557	0 26 58.0	17.672
20	0 10 16.48	2.1561	0 44 38.3	17.671
21	0 12 25.86	2.1567	1 2 18.5	17.667
22	0 14 35.28	2.1573	1 19 58.4	17.662
23	0 16 44.73	2.1579	N. 1 37 38.0	17.656

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 18 54.22	2.1586	N. 1 55 17.1	17.647
1	0 21 3.76	2.1594	2 12 55.6	17.636
2	0 23 13.35	2.1603	2 30 33.4	17.624
3	0 25 23.00	2.1613	2 48 10.5	17.610
4	0 27 32.71	2.1624	3 5 46.6	17.594
5	0 29 42.49	2.1636	3 23 21.7	17.577
6	0 31 52.35	2.1649	3 40 55.7	17.557
7	0 34 2.28	2.1662	3 58 28.5	17.535
8	0 36 12.29	2.1676	4 15 59.9	17.511
9	0 38 22.39	2.1691	4 33 29.8	17.486
10	0 40 32.58	2.1707	4 50 58.2	17.459
11	0 42 42.87	2.1723	5 8 24.9	17.430
12	0 44 53.26	2.1741	5 25 49.8	17.399
13	0 47 3.76	2.1759	5 43 12.8	17.367
14	0 49 14.37	2.1777	6 0 33.8	17.333
15	0 51 25.09	2.1797	6 17 52.8	17.297
16	0 53 35.93	2.1817	6 35 9.5	17.259
17	0 55 46.89	2.1838	6 52 23.9	17.220
18	0 57 57.98	2.1860	7 9 35.9	17.178
19	1 0 9.21	2.1883	7 26 45.3	17.135
20	1 2 20.58	2.1907	7 43 52.1	17.090
21	1 4 32.10	2.1932	8 0 56.1	17.043
22	1 6 43.77	2.1957	8 17 57.3	16.995
23	1 8 55.59	2.1982	8 34 55.5	16.944
24	1 11 7.56	2.2009	N. 8 51 50.6	16.892

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 11 7.56	2.2009	N. 8 51 50.6	16.892
1	1 13 19.69	2.2037	9 8 42.5	16.838
2	1 15 31.99	2.2065	9 25 31.1	16.782
3	1 17 44.47	2.2094	9 42 16.3	16.724
4	1 19 57.12	2.2123	9 58 58.0	16.665
5	1 22 9.95	2.2153	10 15 36.1	16.604
6	1 24 22.96	2.2184	10 32 10.5	16.541
7	1 26 36.16	2.2216	10 48 41.0	16.476
8	1 28 49.56	2.2249	11 5 7.6	16.409
9	1 31 3.15	2.2282	11 21 30.1	16.341
10	1 33 16.95	2.2316	11 37 48.5	16.271
11	1 35 30.95	2.2351	11 54 2.6	16.199
12	1 37 45.16	2.2386	12 10 12.4	16.126
13	1 39 59.58	2.2422	12 26 17.7	16.050
14	1 42 14.22	2.2458	12 42 18.4	15.972
15	1 44 29.08	2.2495	12 58 14.4	15.893
16	1 46 44.16	2.2533	13 14 5.6	15.812
17	1 48 59.47	2.2571	13 29 51.9	15.730
18	1 51 15.01	2.2610	13 45 33.3	15.647
19	1 53 30.79	2.2650	14 1 9.6	15.562
20	1 55 46.81	2.2690	14 16 40.7	15.474
21	1 58 3.07	2.2730	14 32 6.5	15.385
22	2 0 19.57	2.2770	14 47 26.9	15.294
23	2 2 36.31	2.2811	N.15 2 41.8	15.201

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 4 53.30	2.2853	N.15 17 51.0	15.106
1	2 7 10.55	2.2896	15 32 54.5	15.010
2	2 9 28.06	2.2939	15 47 52.2	14.912
3	2 11 45.83	2.2983	16 2 44 0	14.813
4	2 14 3.86	2.3027	16 17 29.8	14.712
5	2 16 22.15	2.3071	16 32 9.5	14.610
6	2 18 40.71	2.3116	16 46 43.0	14.505
7	2 20 59.54	2.3161	17 1 10.1	14.398
8	2 23 18.64	2.3206	17 15 30.8	14.291
9	2 25 38.01	2.3252	17 29 45.0	14.182
10	2 27 57.66	2.3298	17 43 52.6	14.071
11	2 30 17.59	2.3344	17 57 53.5	13.958
12	2 32 37.79	2.3391	18 11 47.6	13.843
13	2 34 58.28	2.3438	18 25 34.7	13.727
14	2 37 19.05	2.3485	18 39 14.8	13.609
15	2 39 40.10	2.3532	18 52 47.8	13.490
16	2 42 1.43	2.3579	19 6 13.6	13.370
17	2 44 23.05	2.3627	19 19 32.2	13.248
18	2 46 44.96	2.3675	19 32 43.4	13.124
19	2 49 7.16	2.3723	19 45 47.1	12.999
20	2 51 29.64	2.3771	19 58 43.3	12.873
21	2 53 52.41	2.3819	20 11 31.9	12.745
22	2 56 15.47	2.3867	20 24 12.6	12.614
23	2 58 38.82	2.3916	20 36 45.5	12.482
24	3 1 2.46	2.3964	N.20 49 10.5	12.349

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	Day.	h.	m.
☽ First Quarter, ...	1	8	20.8
○ Full Moon, ...	8	11	53.1
☾ Last Quarter, ...	15	14	19.7
● New Moon, ...	23	23	58.1

	Day.	h.
☾ Apogee, ...	14	12.0
☾ Perigee, ...	26	6.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	85 27 26	2638	87 5 29	2642	88 43 27	2646	90 21 19	2651
	Mars	W.	54 18 48	2549	55 58 53	2553	57 38 52	2559	59 18 44	2563
	a Pegasi	W.	48 31 45	2838	50 5 23	2815	51 39 31	2795	53 14 5	2777
	Venus	W.	40 52 37	2666	42 30 2	2671	44 7 21	2675	45 44 34	2679
	Jupiter	W.	31 45 6	2363	33 29 34	2366	35 13 57	2371	36 58 14	2376
	Aldebaran	E.	30 44 2	2579	29 4 38	2615	27 26 3	2657	25 48 25	2707
	Saturn	E.	60 21 57	2311	58 36 14	2317	56 50 39	2323	55 5 13	2328
	Pollux	E.	72 58 1	2304	71 12 8	2308	69 26 20	2313	67 40 39	2317
	Regulus	E.	109 42 6	2308	107 56 18	2312	106 10 36	2316	104 25 0	2320
2	Sun	W.	98 29 8	2674	100 6 23	2679	101 43 31	2684	103 20 32	2689
	Mars	W.	67 36 37	2684	69 15 53	2689	70 55 3	2694	72 34 6	2699
	a Pegasi	W.	61 11 54	2718	62 48 10	2710	64 24 36	2704	66 1 10	2700
	Venus	W.	53 49 13	2701	55 25 51	2707	57 2 22	2712	58 38 46	2717
	Jupiter	W.	45 38 8	2396	47 21 48	2401	49 5 21	2406	50 48 47	2411
	a Arietis	W.	17 34 46	2753	19 10 16	2694	20 47 4	2646	22 24 56	2607
	Saturn	E.	46 20 3	2360	44 35 30	2366	42 51 7	2373	41 6 54	2382
	Pollux	E.	58 53 45	2339	57 8 42	2343	55 23 45	2348	53 38 55	2353
	Regulus	E.	95 38 28	2342	93 53 29	2346	92 8 36	2350	90 23 50	2355
3	Sun	W.	111 23 53	2716	113 0 11	2722	114 36 21	2729	116 12 23	2734
	Mars	W.	80 47 34	2624	82 25 56	2631	84 4 9	2637	85 42 14	2643
	a Pegasi	W.	74 5 10	2689	75 42 4	2689	77 18 58	2690	78 55 51	2692
	Venus	W.	66 39 4	2744	68 14 46	2749	69 50 21	2753	71 25 50	2760
	Jupiter	W.	59 24 13	2436	61 6 56	2441	62 49 32	2446	64 32 1	2452
	a Arietis	W.	30 44 12	2515	32 25 4	2508	34 6 6	2502	35 47 16	2498
	Saturn	E.	32 29 6	2433	30 46 19	2446	29 3 50	2462	27 21 43	2480
	Pollux	E.	44 56 36	2379	43 12 31	2384	41 28 33	2390	39 44 44	2396
	Regulus	E.	81 41 46	2380	79 57 43	2385	78 13 47	2391	76 29 59	2396
4	Sun	W.	124 10 33	2766	125 45 45	2773	127 20 48	2780	128 55 42	2787
	Mars	W.	93 50 45	2672	95 28 3	2678	97 5 13	2684	98 42 15	2690
	a Pegasi	W.	86 59 21	2710	88 35 47	2716	90 12 6	2722	91 48 17	2729
	Venus	W.	79 21 18	2790	80 55 59	2796	82 30 32	2801	84 4 58	2808
	Jupiter	W.	73 2 25	2491	74 44 5	2486	76 25 38	2493	78 7 1	2499
	a Arietis	W.	44 13 59	2494	45 55 21	2496	47 36 40	2498	49 17 56	2501
	Aldebaran	W.	15 59 50	3386	17 22 22	3223	18 48 4	3099	20 16 15	3005
	Pollux	E.	31 7 43	2426	29 24 46	2433	27 41 58	2440	25 59 20	2447
	Regulus	E.	67 52 58	2424	66 9 58	2431	64 27 7	2437	62 44 25	2443
	Spica	E.	121 53 39	2419	120 10 32	2425	118 27 33	2431	116 44 43	2437
5	Mars	W.	106 45 13	2724	108 21 21	2730	109 57 19	2737	111 33 7	2744
	a Pegasi	W.	99 46 43	2770	101 21 50	2780	102 56 44	2792	104 31 23	2804
	Venus	W.	91 54 57	2843	93 28 29	2850	95 1 52	2856	96 35 7	2864
	Jupiter	W.	86 31 43	2532	88 12 12	2539	89 52 31	2545	91 32 41	2553
	a Arietis	W.	57 43 9	2520	59 23 54	2525	61 4 32	2530	62 45 3	2536
	Aldebaran	W.	27 59 17	2766	29 34 29	2743	31 10 12	2725	32 46 19	2710
	Regulus	E.	54 13 11	2477	52 31 25	2484	50 49 49	2491	49 8 23	2499
	Spica	E.	108 12 41	2469	106 30 44	2476	104 48 57	2482	103 7 19	2489
6	Venus	W.	104 18 50	2904	105 51 4	2912	107 23 8	2921	108 55 0	2930
	Jupiter	W.	99 50 58	2591	101 30 5	2600	103 9 0	2607	104 47 45	2615
	a Arietis	W.	71 5 35	2568	72 45 14	2574	74 24 44	2582	76 4 4	2589
	Aldebaran	W.	40 50 27	2677	42 27 38	2675	44 4 51	2675	45 42 4	2676
	Regulus	E.	40 43 55	2538	39 3 35	2547	37 23 27	2556	35 43 32	2566

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	91 59 5	2655	93 36 45	2660	95 14 19	2664	96 51 47	2669
	Mars	W.	60 58 30	2567	62 38 10	2571	64 17 45	2575	65 57 14	2580
	α Pegasi	W.	54 49 3	2762	56 24 21	2748	57 59 57	2736	59 35 49	2726
	Venus	W.	47 21 42	2684	48 58 44	2688	50 35 40	2692	52 12 30	2696
	Jupiter	W.	38 42 25	2379	40 26 30	2384	42 10 28	2389	43 54 21	2393
	Aldebaran	E.	24 11 55	2771	22 36 49	2845	21 3 20	2941	19 31 53	3069
	Saturn	E.	53 19 54	2333	51 34 43	2339	49 49 40	2345	48 4 46	2353
	Pollux	E.	65 55 4	2321	64 9 35	2325	62 24 12	2329	60 38 55	2334
	Regulus	E.	102 39 29	2324	100 54 5	2328	99 8 47	2332	97 23 34	2337
2	Sun	W.	104 57 27	2695	106 34 14	2700	108 10 54	2705	109 47 27	2710
	Mars	W.	74 13 2	2604	75 51 50	2609	77 30 31	2615	79 9 6	2620
	α Pegasi	W.	67 37 50	2696	69 14 35	2693	70 51 24	2691	72 28 16	2689
	Venus	W.	60 15 3	2722	61 51 14	2727	63 27 18	2732	65 3 15	2738
	Jupiter	W.	52 32 6	2415	54 15 19	2420	55 58 25	2426	57 41 23	2431
	α Arietis	W.	24 3 51	2577	25 43 17	2556	27 23 14	2538	29 3 34	2525
	Saturn	E.	39 22 53	2391	37 39 5	2400	35 55 30	2410	34 12 10	2422
	Pollux	E.	51 54 12	2358	50 9 37	2363	48 25 9	2368	46 40 49	2373
	Regulus	E.	88 39 11	2360	86 54 39	2365	85 10 14	2370	83 25 56	2375
3	Sun	W.	117 49 18	2741	119 24 4	2747	120 59 42	2753	122 35 12	2760
	Mars	W.	87 20 11	2648	88 58 1	2653	90 35 44	2659	92 13 19	2666
	α Pegasi	W.	80 32 41	2695	82 9 28	2698	83 46 11	2701	85 22 49	2706
	Venus	W.	73 1 11	2766	74 36 23	2771	76 11 29	2776	77 46 28	2783
	Jupiter	W.	66 14 22	2458	67 56 35	2464	69 38 39	2469	71 20 36	2475
	α Arietis	W.	37 28 32	2495	39 9 52	2494	40 51 14	2493	42 32 37	2494
	Saturn	E.	25 40 2	2500	23 58 49	2522	22 18 7	2549	20 38 2	2583
	Pollux	E.	38 1 3	2401	36 17 30	2408	34 34 6	2413	32 50 50	2419
	Regulus	E.	74 46 19	2402	73 2 47	2407	71 19 22	2413	69 36 6	2419
4	Sun	W.	130 30 27	2796	132 5 1	2802	133 39 23	2810	135 13 41	2818
	Mars	W.	100 19 8	2696	101 55 53	2702	103 32 29	2710	105 8 56	2716
	α Pegasi	W.	93 24 19	2736	95 0 11	2744	96 35 53	2752	98 11 24	2761
	Venus	W.	85 39 15	2815	87 13 23	2821	88 47 23	2828	90 21 15	2835
	Jupiter	W.	79 48 15	2506	81 29 20	2512	83 10 16	2518	84 51 4	2525
	α Arietis	W.	50 59 8	2504	52 40 16	2507	54 21 19	2511	56 2 17	2515
	Aldebaran	W.	21 46 22	2982	23 18 0	2875	24 50 51	2830	26 24 40	2793
	Pollux	E.	24 16 52	2455	22 34 35	2463	20 52 30	2472	19 10 38	2482
	Regulus	E.	61 1 52	2450	59 19 28	2456	57 37 13	2462	55 55 7	2470
	Spica	E.	115 2 1	2443	113 19 28	2450	111 37 4	2455	109 54 48	2462
5	Mars	W.	113 8 46	2752	114 44 17	2760	116 19 38	2768	117 54 48	2777
	α Pegasi	W.	106 5 46	2816	107 39 53	2829	109 13 43	2844	110 47 14	2861
	Venus	W.	98 8 12	2873	99 41 6	2880	101 13 50	2887	102 46 25	2896
	Jupiter	W.	93 12 41	2560	94 52 31	2567	96 32 11	2575	98 11 40	2584
	α Arietis	W.	64 25 26	2542	66 5 41	2548	67 45 48	2554	69 25 46	2561
	Aldebaran	W.	34 22 45	2699	35 59 26	2690	37 36 19	2684	39 13 20	2680
	Regulus	E.	47 27 8	2506	45 46 3	2514	44 5 9	2522	42 24 26	2530
	Spica	E.	101 25 51	2497	99 44 33	2504	98 3 25	2512	96 22 28	2519
6	Venus	W.	110 26 41	2939	111 58 11	2947	113 29 30	2956	115 0 38	2965
	Jupiter	W.	106 26 19	2624	108 4 41	2633	109 42 51	2641	111 20 50	2650
	α Arietis	W.	77 43 14	2597	79 22 13	2605	81 1 1	2613	82 39 38	2621
	Aldebaran	W.	47 19 16	2678	48 56 26	2681	50 33 32	2684	52 10 34	2687
	Regulus	E.	34 3 50	2576	32 24 21	2585	30 45 6	2596	29 6 6	2607

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
6	Spica	E.	94	41	41	2627	93	1	5	2635	91	20	40	2642	89	40	25	2650
7	Jupiter	W.	112	58	37	2659	114	36	12	2669	116	13	34	2678	117	50	44	2687
	a Arietis	W.	84	18	4	2630	85	56	18	2639	87	34	20	2648	89	12	10	2656
	Aldebaran	W.	53	47	31	2692	55	24	22	2696	57	1	7	2702	58	37	44	2709
	Saturn	W.	23	10	45	2698	24	47	28	2698	26	24	10	2698	28	0	53	2696
	Regulus	E.	27	27	20	2618	25	48	50	2631	24	10	37	2643	22	32	41	2657
	Spica	E.	81	22	4	2593	79	42	59	2601	78	4	6	2611	76	25	26	2620
8	a Arietis	W.	97	18	14	2705	98	54	47	2716	100	31	6	2726	102	7	11	2736
	Aldebaran	W.	66	38	35	2744	68	14	16	2753	69	49	46	2761	71	25	5	2769
	Saturn	W.	36	4	24	2707	37	40	54	2715	39	17	14	2720	40	53	25	2728
	Pollux	W.	22	37	18	2679	24	14	26	2688	25	51	22	2697	27	28	6	2706
	Spica	E.	68	15	15	2668	66	37	52	2678	65	0	42	2688	63	23	46	2698
	Antares	E.	114	8	56	2667	112	31	32	2678	110	54	22	2687	109	17	25	2697
9	a Arietis	W.	110	4	9	2791	111	38	49	2802	113	13	14	2813	114	47	25	2825
	Aldebaran	W.	79	18	44	2816	80	52	51	2826	82	26	45	2835	84	0	27	2846
	Saturn	W.	48	51	58	2768	50	27	8	2777	52	2	6	2785	53	36	54	2795
	Pollux	W.	35	28	43	2754	37	4	11	2763	38	39	27	2773	40	14	30	2784
	Spica	E.	55	22	24	2749	53	46	49	2760	52	11	28	2769	50	36	20	2779
	Antares	E.	101	16	2	2748	99	40	26	2759	98	5	4	2769	96	29	55	2779
10	Aldebaran	W.	91	45	38	2898	93	18	0	2908	94	50	9	2919	96	22	4	2929
	Saturn	W.	61	27	48	2841	63	1	23	2851	64	34	45	2862	66	7	53	2871
	Pollux	W.	48	6	23	2835	49	40	6	2845	51	13	36	2855	52	46	53	2865
	Spica	E.	42	44	6	2832	41	10	20	2842	39	36	47	2852	38	3	27	2863
	Antares	E.	88	37	36	2831	87	3	49	2842	85	30	15	2852	83	56	54	2862
11	Aldebaran	W.	103	58	21	2982	105	28	56	2993	106	59	18	3003	108	29	27	3014
	Saturn	W.	73	50	34	2918	75	22	30	2927	76	54	15	2936	78	25	49	2945
	Pollux	W.	60	30	7	2913	62	2	9	2923	63	33	59	2932	65	5	37	2941
	Regulus	W	23	52	0	2941	25	23	27	2947	26	54	46	2954	28	25	57	2961
	Spica	E.	30	20	4	2912	28	48	1	2922	27	16	10	2931	25	44	31	2941
	Antares	E.	76	13	24	2911	74	41	19	2921	73	9	27	2930	71	37	46	2939
12	Saturn	W.	86	0	52	2986	87	31	22	2994	89	1	42	3002	90	31	52	3009
	Pollux	W.	72	41	1	2983	74	11	35	2991	75	41	59	2998	77	12	14	3005
	Regulus	W.	35	59	39	2995	37	29	58	3002	39	0	8	3009	40	30	9	3016
	Antares	E.	64	2	8	2981	62	31	32	2989	61	1	5	2997	59	30	48	3004
	a Aquilæ	E.	112	15	17	3960	111	2	58	3949	109	50	27	3937	108	37	45	3928
	SUN	E.	139	56	19	3382	138	33	42	3389	137	11	13	3396	135	48	52	3404
13	Saturn	W.	98	0	35	3041	99	29	57	3047	100	59	12	3052	102	28	20	3057
	Pollux	W.	84	41	21	3037	86	10	48	3043	87	40	8	3047	89	9	22	3052
	Regulus	W.	47	58	21	3044	49	27	39	3049	50	56	51	3054	52	25	57	3058
	Antares	E.	52	1	30	3035	50	32	1	3040	49	2	38	3045	47	33	21	3051
	a Aquilæ	E.	102	32	19	3898	101	18	57	3894	100	5	31	3891	98	52	2	3888
	SUN	E.	128	58	58	3433	127	37	19	3438	126	15	46	3443	124	54	18	3448
14	Saturn	W.	109	52	39	3077	111	21	17	3079	112	49	52	3082	114	18	24	3083
	Pollux	W.	96	34	18	3069	98	3	5	3071	99	31	50	3073	101	0	33	3073
	Regulus	W.	59	50	16	3073	61	18	58	3076	62	47	37	3078	64	16	14	3078
	Antares	E.	40	8	15	3067	38	39	25	3069	37	10	38	3071	35	41	53	3073
	a Aquilæ	E.	92	44	13	3886	91	30	39	3888	90	17	7	3889	89	3	36	3891

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
6	Spica	E.	88 0 21	2559	86 20 29	2567	84 40 49	2576	83 1 21	2584
7	Jupiter	W.	119 27 41	2696	121 4 26	2707	122 40 57	2716	124 17 16	2725
	a Arietis	W.	90 49 49	2666	92 27 15	2675	94 4 28	2686	95 41 27	2695
	Aldebaran	W.	60 14 12	2715	61 50 32	2722	63 26 43	2729	65 2 44	2737
	Saturn	W.	29 37 36	2697	31 14 20	2697	32 51 4	2698	34 27 47	2702
	Regulus	E.	20 55 4	2678	19 17 48	2690	17 40 55	2710	16 4 28	2735
	Spica	E.	74 46 58	2629	73 8 43	2639	71 30 41	2648	69 52 51	2658
8	*a* Arietis	W.	103 43 3	2747	105 18 41	2757	106 54 5	2769	108 29 14	2779
	Aldebaran	W.	73 0 13	2779	74 35 9	2788	76 9 53	2797	77 44 25	2807
	Saturn	W.	42 29 28	2735	44 5 21	2743	45 41 4	2751	47 16 36	2759
	Pollux	W.	29 4 38	2715	30 40 58	2724	32 17 6	2734	33 53 1	2744
	Spica	E.	61 47 3	2707	60 10 32	2717	58 34 15	2728	56 58 12	2739
	Antares	E.	107 40 41	2707	106 4 11	2718	104 27 55	2728	102 51 52	2738
9	*a* Arietis	W.	116 21 21	2837	117 55 1	2848	119 28 26	2860	121 1 36	2873
	Aldebaran	W.	85 33 55	2856	87 7 10	2866	88 40 13	2876	90 13 2	2887
	Saturn	W.	55 11 29	2804	56 45 52	2813	58 20 3	2823	59 54 1	2831
	Pollux	W.	41 49 19	2794	43 23 55	2805	44 58 17	2814	46 32 26	2825
	Spica	E.	49 1 25	2791	47 26 45	2801	45 52 19	2811	44 18 6	2821
	Antares	E.	94 54 59	2790	93 20 18	2801	91 45 51	2811	90 11 37	2821
10	Aldebaran	W.	97 53 46	2939	99 25 15	2950	100 56 30	2961	102 27 32	2971
	Saturn	W.	67 40 49	2880	69 13 33	2890	70 46 5	2898	72 18 26	2909
	Pollux	W.	54 19 57	2875	55 52 48	2884	57 25 27	2894	58 57 53	2904
	Spica	E.	36 30 21	2873	34 57 28	2883	33 24 47	2893	31 52 19	2903
	Antares	E.	82 23 47	2873	80 50 53	2882	79 18 11	2891	77 45 41	2901
11	Aldebaran	W.	109 59 23	3023	111 29 7	3034	112 58 37	3044	114 27 55	3055
	Saturn	W.	79 57 11	2954	81 28 22	2962	82 59 22	2970	84 30 12	2978
	Pollux	W.	66 37 4	2950	68 8 19	2959	69 39 23	2967	71 10 17	2975
	Regulus	W	29 56 59	2968	31 27 52	2975	32 58 36	2981	34 29 12	2989
	Spica	E.	24 13 4	2950	22 41 48	2958	21 10 43	2966	19 39 50	2977
	Antares	E.	70 6 16	2948	68 34 58	2957	67 3 51	2965	65 32 54	2973
12	Saturn	W.	92 1 53	3017	93 31 45	3023	95 1 29	3029	96 31 6	3035
	Pollux	W.	78 42 20	3013	80 12 17	3019	81 42 6	3026	83 11 47	3031
	Regulus	W.	42 0 2	3022	43 29 48	3028	44 59 26	3034	46 28 57	3039
	Antares	E.	58 0 40	3010	56 30 40	3018	55 0 49	3024	53 31 6	3030
	a Aquilæ	E.	107 24 54	3920	106 11 56	3914	104 58 50	3907	103 45 37	3902
	Sun	E.	134 26 39	3409	133 4 33	3415	131 42 34	3423	130 20 43	3428
13	Saturn	W.	103 57 22	3062	105 26 18	3066	106 55 9	3069	108 23 56	3073
	Pollux	W.	90 38 31	3056	92 7 35	3060	93 36 33	3064	95 5 27	3066
	Regulus	W.	53 54 58	3062	55 23 54	3066	56 52 45	3069	58 21 32	3072
	Antares	E.	46 4 11	3055	44 35 6	3058	43 6 5	3061	41 37 8	3065
	a Aquilæ	E.	97 38 30	3887	96 24 57	3886	95 11 23	3885	93 57 48	3885
	Sun	E.	123 32 56	3452	122 11 38	3455	120 50 24	3459	119 29 14	3463
14	Saturn	W.	115 46 54	3085	117 15 22	3086	118 43 49	3087	120 12 15	3088
	Pollux	W.	102 29 15	3074	103 57 55	3075	105 26 35	3075	106 55 15	3076
	Regulus	W.	65 44 50	3079	67 13 25	3080	68 41 59	3079	70 10 34	3079
	Antares	E.	34 13 10	3078	32 44 27	3077	31 15 45	3078	29 47 3	3078
	a Aquilæ	E.	87 50 7	3894	86 36 41	3897	85 23 18	3900	84 9 58	3904

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	E.	118 8 8	3464	116 47 4	3466	115 26 2	3468	114 5 2	3469
15	Pollux	W.	108 23 55	3074	109 52 36	3073	111 21 19	3070	112 50 5	3068
	Regulus	W.	71 39 9	3078	73 7 46	3076	74 36 25	3074	76 5 6	3072
	Spica	W.	17 36 13	3075	19 4 53	3073	20 33 35	3071	22 2 20	3069
	Antares	E.	28 18 20	3072	26 49 36	3070	25 20 50	3069	23 52 3	3067
	a Aquilæ	E.	82 56 42	3908	81 43 30	3914	80 30 24	3919	79 17 23	3924
	Sun	E.	107 20 10	3467	105 59 9	3465	104 38 6	3463	103 17 1	3461
16	Regulus	W.	83 29 29	3052	84 58 37	3047	86 27 52	3041	87 57 14	3034
	Spica	W.	29 27 6	3048	30 56 19	3043	32 25 39	3037	33 55 6	3030
	a Aquilæ	E.	73 14 1	3964	72 1 46	3974	70 49 41	3986	69 37 48	3999
	Sun	E.	96 30 36	3438	95 9 3	3432	93 47 23	3426	92 25 36	3419
17	Regulus	W.	95 26 13	2996	96 56 31	2987	98 27 0	2977	99 57 41	2967
	Spica	W.	41 24 31	2991	42 54 55	2982	44 25 30	2973	45 56 17	2962
	a Aquilæ	E.	63 41 49	4080	62 31 28	4103	61 21 29	4126	60 11 52	4152
	Sun	E.	85 34 30	3376	84 11 46	3366	82 48 51	3356	81 25 44	3345
18	Regulus	W.	107 34 27	2911	109 6 32	2899	110 38 52	2886	112 11 29	2873
	Spica	W.	53 33 34	2905	55 5 46	2893	56 38 14	2881	58 10 57	2868
	Sun	E.	74 26 48	3283	73 2 17	3269	71 37 29	3256	70 12 25	3241
19	Spica	W.	65 59 2	2795	67 33 36	2780	69 8 30	2765	70 43 44	2749
	Antares	W.	20 5 11	2795	21 39 45	2780	23 14 39	2764	24 49 54	2749
	Sun	E.	63 2 40	3163	61 35 47	3147	60 8 34	3129	58 41 0	3114
20	Spica	W.	78 45 13	2667	80 22 37	2651	82 0 23	2634	83 38 32	2617
	Antares	W.	32 51 25	2667	34 28 49	2650	36 6 36	2633	37 44 46	2616
	Sun	E.	51 18 1	3026	49 48 20	3008	48 18 17	2989	46 47 51	2972
21	Spica	W.	91 55 8	2531	93 35 38	2514	95 16 32	2497	96 57 49	2480
	Antares	W.	46 1 22	2531	47 41 52	2514	49 22 46	2497	51 4 4	2480
	Sun	E.	39 10 3	2882	37 37 21	2864	36 4 16	2847	34 30 49	2831
26	Sun	W.	27 12 47	2442	28 55 22	2441	30 37 59	2439	32 20 38	2439
	a Arietis	E.	32 1 58	2245	30 14 38	2264	28 27 46	2286	26 41 26	2317
	Aldebaran	E.	62 48 56	2202	61 0 32	2206	59 12 14	2210	57 24 2	2216
	Saturn	E.	92 16 54	2132	90 26 43	2182	88 36 33	2132	86 46 23	2134
	Pollux	E.	106 3 0	2118	104 12 28	2118	102 21 56	2118	100 31 25	2120
27	Sun	W.	40 53 34	2449	42 35 59	2454	44 18 17	2458	46 0 29	2463
	Mars	W.	15 54 12	2365	17 38 37	2370	19 22 55	2375	21 7 6	2380
	Aldebaran	E.	48 25 33	2258	46 38 32	2270	44 51 49	2284	43 5 26	2300
	Saturn	E.	77 36 27	2151	75 46 45	2155	73 57 9	2160	72 7 41	2167
	Pollux	E.	91 19 39	2134	89 29 32	2139	87 39 32	2144	85 49 40	2149
28	Sun	W.	54 29 29	2496	56 10 49	2503	57 51 59	2512	59 32 56	2521
	Mars	W.	29 45 49	2415	31 29 3	2423	33 12 6	2430	34 54 58	2438
	Jupiter	W.	22 28 3	2258	24 15 5	2264	26 1 57	2272	27 48 38	2279
	Aldebaran	E.	34 20 11	2410	32 36 50	2441	30 54 14	2479	29 12 31	2521
	Saturn	E.	63 2 50	2202	61 14 25	2211	59 26 14	2220	57 38 16	2229
	Pollux	E.	76 42 32	2181	74 53 36	2189	73 4 52	2197	71 16 20	2205
	Regulus	E	113 27 20	2186	111 38 31	2193	109 49 53	2201	108 1 27	2209

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	E.	112 44 3	3470	111 23 5	3470	110 2 7	3470	108 41 9	3469
15	Pollux	W.	114 18 54	3065	115 47 46	3062	117 16 42	3059	118 45 42	3056
	Regulus	W.	77 33 50	3069	79 2 38	3065	80 31 30	3061	82 0 27	3057
	Spica	W.	23 31 8	3065	25 0 0	3061	26 28 57	3057	27 57 59	3053
	Antares	E.	22 23 13	3064	20 54 19	3061	19 25 20	3056	17 56 17	3052
	α Aquilæ	E.	78 4 28	3931	76 51 39	3937	75 38 58	3946	74 26 25	3956
	Sun	E.	101 55 53	3457	100 34 41	3454	99 13 25	3448	97 52 3	3444
16	Regulus	W.	89 26 44	3028	90 56 22	3021	92 26 9	3013	93 56 6	3006
	Spica	W.	35 24 41	3024	36 54 24	3017	38 24 16	3009	89 54 18	3000
	α Aquilæ	E.	68 26 7	4012	67 14 39	4027	66 3 26	4043	64 52 29	4061
	Sun	E.	91 3 41	3412	89 41 38	3404	88 19 26	3394	86 57 3	3386
17	Regulus	W.	101 28 35	2957	102 59 42	2946	104 31 3	2935	106 2 38	2924
	Spica	W.	47 27 17	2952	48 58 30	2941	50 29 57	2930	52 1 38	2918
	α Aquilæ	E.	59 2 40	4180	57 53 55	4211	56 45 39	4246	55 37 56	4286
	Sun	E.	80 2 25	3333	78 38 52	3321	77 15 5	3309	75 51 4	3296
18	Regulus	W.	113 44 23	2859	115 17 34	2845	116 51 3	2831	118 24 51	2817
	Spica	W.	59 43 57	2851	61 17 15	2838	62 50 53	2825	64 24 48	2811
	Sun	E.	68 47 4	3226	67 21 26	3211	65 55 30	3196	64 29 15	3179
19	Spica	W.	72 19 19	2733	73 55 15	2716	75 31 33	2701	77 8 12	2684
	Antares	W.	26 25 29	2733	28 1 25	2716	29 37 43	2700	31 14 23	2684
	Sun	E.	57 13 7	3096	55 44 53	3078	54 16 17	3061	52 47 20	3043
20	Spica	W.	85 17 4	2599	86 56 0	2583	88 35 19	2565	90 15 2	2548
	Antares	W.	39 23 19	2600	41 2 14	2583	42 41 33	2566	44 21 16	2548
	Sun	E.	45 17 3	2954	43 45 52	2935	42 14 18	2918	40 42 22	2900
21	Spica	W.	98 39 30	2464	100 21 34	2447	102 4 2	2430	103 46 54	2415
	Antares	W.	52 45 46	2463	54 27 51	2448	56 10 18	2431	57 53 8	2415
	Sun	E.	32 57 0	2812	31 22 49	2796	29 48 16	2782	28 13 24	2767
26	Sun	W.	34 3 17	2440	35 45 55	2441	37 28 31	2443	39 11 4	2445
	α Arietis	E.	24 55 51	2355	23 11 11	2397	21 27 32	2447	19 45 4	2504
	Aldebaran	E.	55 35 58	2222	53 48 3	2230	52 0 20	2239	50 12 50	2247
	Saturn	E.	84 56 15	2136	83 6 10	2139	81 16 10	2143	79 26 16	2146
	Pollux	E.	98 40 56	2122	96 50 30	2124	95 0 8	2128	93 9 51	2131
27	Sun	W.	47 42 34	2469	49 24 31	2475	51 6 20	2482	52 47 59	2489
	Mars	W.	22 51 9	2387	24 35 3	2393	26 18 48	2399	28 2 24	2407
	Aldebaran	E.	41 19 27	2318	39 33 54	2336	37 48 47	2357	36 4 10	2383
	Saturn	E.	70 18 23	2173	68 29 15	2179	66 40 16	2186	64 51 27	2194
	Pollux	E.	83 50 56	2155	82 10 20	2161	80 20 54	2168	78 31 38	2174
28	Sun	W.	61 13 40	2530	62 54 12	2538	64 34 32	2547	66 14 40	2556
	Mars	W.	36 37 39	2448	38 20 6	2457	40 2 20	2466	41 44 21	2475
	Jupiter	W.	29 35 8	2286	31 21 28	2294	33 7 37	2303	34 53 32	2312
	Aldebaran	E.	27 31 44	2569	25 52 7	2627	24 13 49	2700	22 37 5	2783
	Saturn	E.	55 50 32	2239	54 3 3	2249	52 15 49	2260	50 28 50	2272
	Pollux	E.	69 28 0	2214	67 39 53	2223	65 51 59	2231	64 4 18	2241
	Regulus	E.	106 13 13	2217	104 25 11	2226	102 37 22	2235	100 49 46	2244

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semidiameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Sun.	1	22 49 31.83	9.356	S. 7 28 58.6	57.06	16 10.24	65.41	12 33.10	0.500
Mon.	2	22 53 16.08	9.335	7 6 6.0	57.32	16 10.00	65.34	12 20.84	0.521
Tues.	3	22 56 59.83	9.314	6 43 7.5	57.56	16 9.76	65.27	12 8.08	0.542
Wed.	4	23 0 43.10	9.294	6 20 3.6	57.78	16 9.51	65.20	11 54.83	0.562
Thur.	5	23 4 25.89	9.275	5 56 54.7	57.98	16 9.26	65.14	11 41.11	0.581
Fri.	6	23 8 8.24	9.257	5 33 41.0	58.17	16 9.01	65.08	11 26.94	0.599
Sat.	7	23 11 50.16	9.240	5 10 23.0	58.34	16 8.76	65.02	11 12.35	0.616
Sun.	8	23 15 31.69	9.224	4 47 1.0	58.50	16 8.51	64.96	10 57.37	0.632
Mon.	9	23 19 12.84	9.208	4 23 35.4	58.64	16 8.25	64.91	10 42.00	0.648
Tues.	10	23 22 53.63	9.194	4 0 6.5	58.77	16 7.99	64.86	10 26.27	0.662
Wed.	11	23 26 34.07	9.181	3 36 34.8	58.89	16 7.73	64.81	10 10.21	0.676
Thur.	12	23 30 14.21	9.168	3 13 0.4	58.99	16 7.46	64.77	9 53.84	0.688
Fri.	13	23 33 54.07	9.157	2 49 23.9	59.07	16 7.19	64.73	9 37.19	0.699
Sat.	14	23 37 33.66	9.147	2 25 45.5	59.14	16 6.92	64.69	9 20.28	0.709
Sun.	15	23 41 13.02	9.137	2 2 5.6	59.20	16 6.65	64.65	9 3.14	0.719
Mon.	16	23 44 52.18	9.129	1 38 24.5	59.24	16 6.37	64.61	8 45.78	0.727
Tues.	17	23 48 31.14	9.121	1 14 42.6	59.27	16 6.09	64.58	8 28.23	0.735
Wed.	18	23 52 9.92	9.114	0 51 0.2	59.28	16 5.81	64.56	8 10.51	0.742
Thur.	19	23 55 48.53	9.108	0 27 17.6	59.28	16 5.53	64.54	7 52.62	0.748
Fri.	20	23 59 27.02	9.103	S. 0 3 35.4	59.26	16 5.25	64.52	7 34.60	0.753
Sat.	21	0 3 5.40	9.099	N. 0 20 6.1	59.23	16 4.97	64.50	7 16.47	0.757
Sun.	22	0 6 43.69	9.095	0 43 46.7	59.18	16 4.69	64.49	6 58.27	0.761
Mon.	23	0 10 21.91	9.092	1 7 26.0	59.11	16 4.41	64.48	6 40.00	0.764
Tues.	24	0 14 0.08	9.090	1 31 3.5	59.03	16 4.13	64.47	6 21.66	0.766
Wed.	25	0 17 38.20	9.089	1 54 38.9	58.93	16 3.85	64.46	6 3.28	0.768
Thur.	26	0 21 16.29	9.088	2 18 11.6	58.82	16 3.58	64.45	5 44.86	0.769
Fri.	27	0 24 54.36	9.087	2 41 41.4	58.69	16 3.30	64.45	5 26.42	0.769
Sat.	28	0 28 32.44	9.088	3 5 8.0	58.54	16 3.03	64.46	5 7.99	0.768
Sun.	29	0 32 10.54	9.089	3 28 30.9	58.38	16 2.76	64.47	4 49.59	0.767
Mon.	30	0 35 48.67	9.091	3 51 49.8	58.20	16 2.49	64.48	4 31.23	0.765
Tues.	31	0 39 26.86	9.094	4 15 4.2	58.01	16 2.21	64.49	4 12.91	0.762
Wed.	32	0 43 5.14	9.098	N. 4 38 13.8	57.80	16 1.93	64.51	3 54.67	0.758

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Sun.	1	22 49 29.85	9.356	S. 7 29 10.5	57.06	12 33.20	0.500	22 36 56.65
Mon.	2	22 53 14.14	9.335	7 6 17.8	57.32	12 20.94	0.521	22 40 53.20
Tues.	3	22 56 57.94	9.314	6 43 19.2	57.56	12 8.18	0.542	22 44 49.76
Wed.	4	23 0 41.25	9.294	6 20 15.1	57.78	11 54.94	0.562	22 48 46.31
Thur.	5	23 4 24.08	9.275	5 57 6.0	57.98	11 41.22	0.581	22 52 42.86
Fri.	6	23 8 6.47	9.257	5 33 52.1	58.17	11 27.05	0.599	22 56 39.42
Sat.	7	23 11 48.43	9.240	5 10 33.9	58.34	11 12.46	0.616	23 0 35.97
Sun.	8	23 15 30.00	9.224	4 47 11.7	58.50	10 57.48	0.632	23 4 32.52
Mon.	9	23 19 11.18	9.208	4 23 45.9	58.64	10 42.11	0.648	23 8 29.07
Tues.	10	23 22 52.02	9.194	4 0 16.8	58.77	10 26.39	0.662	23 12 25.63
Wed.	11	23 26 32.51	9.181	3 36 44.8	58.89	10 10.33	0.676	23 16 22.18
Thur.	12	23 30 12.70	9.168	3 13 10.2	58.99	9 53.96	0.688	23 20 18.74
Fri.	13	23 33 52.61	9.157	2 49 33.5	59.07	9 37.31	0.699	23 24 15.30
Sat.	14	23 37 32.25	9.147	2 25 54.8	59.14	9 20.40	0.709	23 28 11.85
Sun.	15	23 41 11.65	9.137	2 2 14.6	59.20	9 3.25	0.719	23 32 8.40
Mon.	16	23 44 50.85	9.129	1 38 33.2	59.24	8 45.89	0.727	23 36 4.96
Tues.	17	23 48 29.85	9.121	1 14 51.0	59.27	8 28.34	0.735	23 40 1.51
Wed.	18	23 52 8.67	9.114	0 51 8.3	59.28	8 10.61	0.742	23 43 58.06
Thur.	19	23 55 47.33	9.108	0 27 25.4	59.28	7 52.71	0.748	23 47 54.62
Fri.	20	23 59 25.87	9.103	S. 0 3 42.9	59.26	7 34.69	0.753	23 51 51.18
Sat.	21	0 3 4.30	9.099	N. 0 19 58.9	59.28	7 16.57	0.757	23 55 47.73
Sun.	22	0 06 42.64	9.095	0 43 39.8	59.18	6 58.36	0.761	23 59 44.28
Mon.	23	0 10 20.91	9.092	1 7 19.4	59.11	6 40.08	0.764	0 3 40.83
Tues.	24	0 13 59.12	9.090	1 30 57.2	59.03	6 21.74	0.766	0 7 37.38
Wed.	25	0 17 37.29	9.089	1 54 32.9	58.93	6 3.35	0.768	0 11 33.94
Thur.	26	0 21 15.42	9.088	2 18 6.0	58.82	5 44.93	0.769	0 15 30.49
Fri.	27	0 24 53.53	9.087	2 41 36.1	58.69	5 26.48	0.769	0 19 27.05
Sat.	28	0 28 31.65	9.088	3 5 3.0	58.54	5 8.05	0.768	0 23 23.60
Sun.	29	0 32 9.80	9.089	3 28 26.2	58.38	4 49.65	0.767	0 27 20.15
Mon.	30	0 35 47.99	9.091	3 51 45.4	58.20	4 31.28	0.765	0 31 16.71
Tues.	31	0 39 26.22	9.094	4 15 0.1	58.01	4 12.96	0.762	0 35 13.26
Wed.	32	0 43 4.54	9.098	N. 4 38 10.0	57.80	3 54.72	0.758	0 39 9.82

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S True LONGITUDE. λ	THE SUN'S True LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h. m. s.
1	60	340 54 9.9	54 3.0	150.39	+0.28	9.9962978	44.7	1 22 49.74
2	61	341 54 18.3	54 11.3	150.31	0.38	.9964054	45.0	1 18 53.84
3	62	342 54 24.6	54 17.5	150.22	0.45	.9965139	45.4	1 14 57.93
4	63	343 54 28.8	54 21.6	150.13	0.49	.9966235	45.9	1 11 2.02
5	64	344 54 30.8	54 23.5	150.04	0.50	.9967342	46.4	1 7 6.11
6	65	345 54 30.6	54 23.2	149.95	0.49	.9968461	46.9	1 3 10.20
7	66	346 54 28.3	54 20.8	149.86	0.44	.9969592	47.4	0 59 14.30
8	67	347 54 23.9	54 16.3	149.77	0.36	.9970734	47.9	0 55 18.40
9	68	348 54 17.4	54 9.7	149.68	0.26	.9971891	48.5	0 51 22.49
10	69	349 54 8.9	54 1.1	149.60	0.14	.9973062	49.1	0 47 26.58
11	70	350 53 58.4	53 50.4	149.52	+0.01	.9974247	49.7	0 43 30.67
12	71	351 53 46.0	53 37.9	149.44	—0.12	.9975446	50.2	0 39 34.76
13	72	352 53 31.7	53 23.4	149.36	0.25	.9976655	50.6	0 35 38.85
14	73	353 53 15.6	53 7.2	149.29	0.39	.9977876	51.1	0 31 42.94
15	74	354 52 57.6	52 49.1	149.22	0.50	.9979108	51.5	0 27 47.03
16	75	355 52 38.0	52 29.4	149.15	0.59	.9980349	51.8	0 23 51.12
17	76	356 52 16.7	52 8.0	149.08	0.65	.9981596	52.1	0 19 55.22
18	77	357 51 53.6	51 44.8	149.00	0.70	.9982849	52.3	0 15 59.31
19	78	358 51 28.8	51 19.8	148.93	0.70	.9984107	52.5	0 12 3.40
20	79	359 51 2.1	50 53.0	148.85	0.68	.9985367	52.5	0 8 7.49
21	80	0 50 33.6	50 24.4	148.78	0.64	.9986629	52.5	0 4 11.58
22	81	1 50 3.4	49 54.1	148.71	0.55	.9987889	52.5	{ 0 0 15.68 { 23 56 19.78
23	82	2 49 31.4	49 22 0	148.63	0.46	.9989147	52.4	23 52 23.87
24	83	3 48 57.5	48 48.0	148.55	0.34	.9990403	52.3	23 48 27.96
25	84	4 48 21.6	48 12.0	148.46	0.21	.9991657	52.2	23 44 32.05
26	85	5 47 43.6	47 33.9	148.37	—0.09	.9992906	52.0	23 40 36.15
27	86	6 47 3.4	46 53.6	148.28	+0.04	.9994151	51.8	23 36 40.24
28	87	7 46 21.2	46 11.3	148.19	0.15	.9995390	51.6	23 32 44.33
29	88	8 45 36.8	45 26.7	148.10	0.25	.9996626	51.4	23 28 48.42
30	89	9 44 50.1	44 39.9	148.00	0.33	.9997858	51.2	23 24 52.51
31	90	10 44 1.0	43 50.7	147.90	0.37	9.9999084	51.1	23 20 56.61
32	91	11 43 9.5	42 59.0	147.81	+0.39	0.0000308	51.0	23 17 0.70

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h. m.	m.	d.
1	16′ 15″.9	16′ 11″.8	59′ 35″.2	−1″.18	59′ 20″.1	−1″.29	4 34.4	2.34	5.0
2	16 7.4	16 2.8	59 4.0	1.37	58 47.2	1.42	5 32.1	2.45	6.0
3	15 58.1	15 53.3	58 29.8	1.45	58 12.3	1.46	6 31.9	2.50	7.0
4	15 48.6	15 43.9	57 54.8	1.45	57 37.6	1.43	7 32.2	2.46	8.0
5	15 39.3	15 34.8	57 20.7	1.40	57 4.1	1.36	8 30.4	2.35	9.0
6	15 30.4	15 26.2	56 48.1	1.32	56 32.5	1.28	9 25.1	2.19	10.0
7	15 22.1	15 18.1	56 17.4	1.24	56 2.8	1.19	10 15.6	2.02	11.0
8	15 14.2	15 10.5	55 48.8	1.15	55 35.3	1.10	11 2.0	1.87	12.0
9	15 7.0	15 3.7	55 22.4	1.05	55 10.1	0.99	11 45.1	1.75	13.0
10	15 0.6	14 57.7	54 58.6	0.93	54 47.9	0.86	12 26.0	1.68	14.0
11	14 55.0	14 52.6	54 38.0	0.78	54 29.1	0.69	13 5.7	1.65	15.0
12	14 50.5	14 48.7	54 21.4	0.59	54 14.9	0.48	13 45.4	1.67	16.0
13	14 47.3	14 46.3	54 9.8	0.36	54 6.3	−0.22	14 26.0	1.73	17.0
14	14 45.8	14 45.9	54 4.6	−0.06	54 4.8	+0.10	15 8.4	1.82	18.0
15	14 46.6	14 47.8	54 7.0	+0.28	54 11.4	0.46	15 53.5	1.95	19.0
16	14 49.6	14 52.0	54 18.1	0.65	54 27.1	0.85	16 41.8	2.08	20.0
17	14 55.1	14 58.9	54 38.4	1.05	54 52.3	1.25	17 33.2	2.19	21.0
18	15 3.3	15 8.3	55 8.5	1.45	55 27.1	1.65	18 27.1	2.27	22.0
19	15 14.1	15 20.3	55 48.0	1.83	56 11.0	2.00	19 22.3	2.30	23.0
20	15 27.1	15 34.3	56 35.9	2.14	57 2.3	2.25	20 17.4	2.27	24.0
21	15 41.8	15 49.5	57 29.9	2.33	57 58.2	2.37	21 11.3	2.21	25.0
22	15 57.3	16 4.9	58 26.7	2.35	58 54.7	2.28	22 3.4	2.15	26.0
23	16 12.2	16 19.0	59 21.5	2.16	59 46.5	1.98	22 54.2	2.10	27.0
24	16 25.1	16 30.4	60 9.0	1.74	60 28.2	1.45	23 44.3	2.10	28.0
25	16 34.6	16 37.7	60 43.8	1.12	60 55.2	+0.76	☌		29.0
26	16 39.6	16 40.2	61 2.1	+0.38	61 4.3	0.00	0 35.0	2.15	0.6
27	16 39.6	16 37.7	61 2.0	−0.38	60 55.2	−0.73	1 27.6	2.25	1.6
28	16 34.7	16 30.5	60 44.4	1.06	60 29.9	1.34	2 23.0	2.38	2.6
29	16 26.1	16 20.7	60 12.3	1.57	59 52.2	1.75	3 21.8	2.50	3.6
30	16 14.7	16 8.3	59 30.3	1.88	59 7.0	1.97	4 23.2	2.57	4.6
31	16 1.7	15 55.1	58 43.0	2.01	58 18.7	2.01	5 25.2	2.55	5.6
32	15 48.6	15 42.2	57 54.7	−1.98	57 31.3	−1.92	6 25.3	2.43	6.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension	Diff. for 1 m.	Declination.	Diff for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	3 1 2.46	2.3964	N.20 49 10.5	12.349	0	5 0 57.32	2.5731	N.27 44 22.0	4.554
1	3 3 26.39	2.4012	21 1 27.5	12.216	1	5 3 31.75	2.5745	27 48 49.8	4.372
2	3 5 50.61	2.4060	21 13 36.4	12.079	2	5 6 6.26	2.5758	27 53 6.7	4.190
3	3 8 15.11	2.4109	21 25 37.0	11.941	3	5 8 40 85	2.5770	27 57 12.6	4.007
4	3 10 39.90	2.4156	21 37 29.3	11.802	4	5 11 15.50	2.5780	28 1 7.5	3.823
5	3 13 4.98	2.4204	21 49 13.3	11.662	5	5 13 50.21	2.5789	28 4 51.3	3.639
6	3 15 30.35	2.4252	22 0 48.8	11.521	6	5 16 24.97	2.5797	28 8 24.1	3.455
7	3 17 56.00	2.4299	22 12 15.8	11.378	7	5 18 59.77	2.5802	28 11 45.9	3.271
8	3 20 21.94	2.4346	22 23 34.2	11.234	8	5 21 34.60	2.5807	28 14 56.6	3.087
9	3 22 48.16	2.4393	22 34 43.9	11.088	9	5 24 9.45	2.5810	28 17 56.3	2.902
10	3 25 14.66	2.4440	22 45 44.8	10.941	10	5 26 44.32	2.5812	28 20 44.9	2.718
11	3 27 41.44	2.4486	22 56 36.8	10.792	11	5 29 19.19	2.5812	28 23 22.5	2.534
12	3 30 8.50	2.4532	23 7 19.8	10.642	12	5 31 54.06	2.5810	28 25 49.0	2.349
13	3 32 35.83	2.4578	23 17 53.8	10.492	13	5 34 28.92	2.5808	28 28 4.4	2.164
14	3 35 3.44	2.4624	23 28 18.8	10.340	14	5 37 3.76	2.5805	28 30 8.8	1.980
15	3 37 31.32	2.4669	23 38 34.6	10.186	15	5 39 38.58	2.5799	28 32 2.1	1.796
16	3 39 59.47	2.4713	23 48 41.1	10.031	16	5 42 13.36	2.5792	28 33 44.3	1.612
17	3 42 27.88	2.4757	23 58 38.3	9.875	17	5 44 48.09	2.5784	28 35 15.5	1.428
18	3 44 56.55	2.4801	24 8 26.1	9.717	18	5 47 22.77	2.5774	28 36 35.7	1.245
19	3 47 25.48	2.4844	24 18 4.4	9.558	19	5 49 57.39	2.5763	28 37 44.9	1.061
20	3 49 54.67	2.4887	24 27 33.1	9.399	20	5 52 31 93	2.5750	28 38 43.0	0.877
21	3 52 24.12	2.4929	24 36 52.3	9.239	21	5 55 6.39	2.5736	28 39 30.1	0.694
22	3 54 53.82	2.4970	24 46 1.8	9.077	22	5 57 40.76	2.5720	28 40 6.2	0.510
23	3 57 23.76	2.5010	N.24 55 1.5	8.913	23	6 0 15.03	2.5703	N.28 40 31.4	0.328
	MONDAY 2.					WEDNESDAY 4.			
0	3 59 53.94	2.5050	N.25 3 51.4	8.749	0	6 2 49.20	2.5686	N.28 40 45.6	0.146
1	4 2 24.36	2.5090	25 12 31.4	8.584	1	6 5 23.26	2.5667	28 40 48.9	0.036
2	4 4 55.02	2.5128	25 21 1.5	8.418	2	6 7 57.20	2.5645	28 40 41.3	0.217
3	4 7 25.90	2.5165	25 29 21.6	8.251	3	6 10 31.00	2.5622	28 40 22.8	0.398
4	4 9 57.00	2.5202	25 37 31.6	8.083	4	6 13 4.66	2.5597	28 39 53.5	0.578
5	4 12 28.32	2.5238	25 45 31.5	7.914	5	6 15 38.17	2.5572	28 39 13.4	0.758
6	4 14 59.86	2.5274	25 53 21.3	7.744	6	6 18 11.53	2.5546	28 38 22.5	0.937
7	4 17 31.61	2.5308	26 1 0.8	7.573	7	6 20 44.72	2.5517	28 37 20.9	1.116
8	4 20 3.56	2.5341	26 8 30.0	7.401	8	6 23 17.74	2.5488	28 36 8.5	1.295
9	4 22 35.70	2.5373	26 15 48.9	7.229	9	6 25 50.58	2.5457	28 34 45.5	1.472
10	4 25 8.04	2.5405	26 22 57.5	7.056	10	6 28 23.23	2.5425	28 33 11.9	1.649
11	4 27 40.56	2.5435	26 29 55.6	6.881	11	6 30 55.68	2.5391	28 31 27.7	1.825
12	4 30 13.26	2.5464	26 36 43.2	6.706	12	6 33 27.92	2.5356	28 29 32.9	2.001
13	4 32 46.13	2.5492	26 43 20.3	6.530	13	6 35 59.95	2.5320	28 27 27.6	2.176
14	4 35 19.17	2.5520	26 49 46.8	6.353	14	6 38 31.76	2.5283	28 25 11.8	2.350
15	4 37 52.37	2.5547	26 56 2.7	6.175	15	6 41 3.35	2.5245	28 22 45.6	2.522
16	4 40 25.73	2.5572	27 2 7.9	5.997	16	6 43 34.70	2.5205	28 20 9.1	2.694
17	4 42 59.24	2.5596	27 8 2.4	5.819	17	6 46 5.81	2.5164	28 17 22.3	2.865
18	4 45 32.89	2.5619	27 13 46.2	5.640	18	6 48 36.67	2.5121	28 14 25.3	3.035
19	4 48 6.67	2.5640	27 19 19.2	5.461	19	6 51 7.27	2.5078	28 11 18.1	3.205
20	4 50 40.57	2.5660	27 24 41.5	5.282	20	6 53 37.61	2.5034	28 8 0.7	3.374
21	4 53 14.59	2.5680	27 29 53.0	5.101	21	6 56 7.68	2.4988	28 4 33.2	3.541
22	4 55 48.73	2.5699	27 34 53.6	4.919	22	6 58 37.47	2.4941	28 0 55.7	3.707
23	4 58 22.98	2.5716	27 39 43.3	4.737	23	7 1 6.97	2.4893	27 57 8.3	3.872
24	5 0 57.32	2.5731	N.27 44 22.0	4.554	24	7 3 36.19	2.4845	N.27 53 11.0	4.037

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	7 3 36.19	2.4845	N.27 53 11.0	4.037
1	7 6 5.11	2.4795	27 49 3.8	4.202
2	7 8 33.73	2.4744	27 44 46.8	4.365
3	7 11 2.04	2.4692	27 40 20.0	4.526
4	7 13 30.04	2.4640	27 35 43.6	4.686
5	7 15 57.72	2.4586	27 30 57.7	4.845
6	7 18 25.07	2.4531	27 26 2.3	5.003
7	7 20 52.09	2.4476	27 20 57.4	5.160
8	7 23 18.78	2.4420	27 15 43.1	5.316
9	7 25 45.13	2.4362	27 10 19.5	5.470
10	7 28 11.13	2.4304	27 4 46.7	5.623
11	7 30 36.78	2.4246	26 59 4.7	5.776
12	7 33 2 08	2.4188	26 53 13.6	5.927
13	7 35 27.03	2.4128	26 47 13.5	6.077
14	7 37 51.62	2.4067	26 41 4.4	6.225
15	7 40 15.84	2.4006	26 34 46.5	6.372
16	7 42 39.69	2.3944	26 28 19.8	6.517
17	7 45 3.16	2.3881	26 21 44.4	6.662
18	7 47 26.26	2.3818	26 15 0.3	6.805
19	7 49 48.98	2.3754	26 8 7.7	6.947
20	7 52 11.31	2.3690	26 1 6 6	7.088
21	7 54 33.26	2.3626	25 53 57.1	7.227
22	7 56 54.82	2.3561	25 46 39.3	7.365
23	7 59 15.99	2.3496	N.25 39 13.3	7.502

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 1 36.77	2.3430	N.25 31 39.1	7.637
1	8 3 57.16	2.3364	25 23 56.8	7.771
2	8 6 17.14	2.3297	25 16 6.5	7.904
3	8 8 36.72	2.3230	25 8 8.3	8.035
4	8 10 55.90	2.3163	25 0 2.3	8.164
5	8 13 14.68	2.3096	24 51 48.6	8.292
6	8 15 33.05	2.3028	24 43 27.2	8.419
7	8 17 51.02	2.2960	24 34 58.3	8.544
8	8 20 8.58	2.2892	24 26 21.9	8.669
9	8 22 25.73	2.2824	24 17 38.0	8.792
10	8 24 42.47	2.2756	24 8 46.8	8.913
11	8 26 58.80	2.2688	23 59 48.4	9.033
12	8 29 14.72	2.2620	23 50 42.8	9.151
13	8 31 30.23	2.2552	23 41 30.2	9.268
14	8 33 45.34	2.2484	23 32 10.6	9.384
15	8 36 0.04	2.2415	23 22 44.1	9.498
16	8 38 14.32	2.2346	23 13 10.7	9.611
17	8 40 28.19	2.2277	23 3 30.6	9.723
18	8 42 41.65	2.2209	22 53 43.8	9.833
19	8 44 54.70	2.2141	22 43 50.5	9.942
20	8 47 7.34	2.2073	22 33 50.7	10.050
21	8 49 19.57	2.2005	22 23 44.5	10.156
22	8 51 31.39	2.1937	22 13 32.0	10.260
23	8 53 42.81	2.1869	22 3 13.3	10.362
24	8 55 53.82	2.1802	N.21 52 48.5	10.464

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 55 53.82	2.1802	N.21 52 48.5	10.464
1	8 58 4.43	2.1734	21 42 17.6	10.565
2	9 0 14.63	2.1667	21 31 40.7	10.663
3	9 2 24.43	2.1600	21 20 58.0	10.760
4	9 4 33.83	2.1533	21 10 9.5	10.856
5	9 6 42.83	2.1467	20 59 15.3	10.951
6	9 8 51.43	2.1401	20 48 15.4	11.044
7	9 10 59.64	2.1335	20 37 10.0	11.136
8	9 13 7.45	2.1269	20 25 59.1	11.226
9	9 15 14.87	2.1204	20 14 42.8	11.315
10	9 17 21.90	2.1139	20 3 21.2	11.403
11	9 19 28.54	2.1075	19 51 54.4	11.489
12	9 21 34.80	2.1011	19 40 22.5	11.574
13	9 23 40.67	2.0947	19 28 45.5	11.658
14	9 25 46.16	2.0884	19 17 3.5	11.741
15	9 27 51.27	2.0821	19 5 16.6	11.822
16	9 29 56.01	2.0759	18 53 24.9	11.901
17	9 32 0.38	2.0697	18 41 28.5	11.979
18	9 34 4.38	2.0635	18 29 27.4	12.056
19	9 36 8.01	2.0574	18 17 21.7	12.132
20	9 38 11.27	2.0513	18 5 11.5	12.207
21	9 40 14.17	2.0453	17 52 56.9	12.280
22	9 42 16.71	2.0393	17 40 37.9	12.352
23	9 44 18.89	2.0334	N.17 28 14.7	12.422

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 46 20.72	2.0275	N.17 15 47.3	12.492
1	9 48 22.20	2.0217	17 3 15.7	12.561
2	9 50 23.33	2.0159	16 50 40.0	12.627
3	9 52 24.11	2.0102	16 38 0.4	12.693
4	9 54 24.55	2.0046	16 25 17.0	12.755
5	9 56 24.66	1.9991	16 12 29.8	12.818
6	9 58 24.44	1.9936	15 59 38.8	12.880
7	10 0 23.89	1.9881	15 46 44.0	12.941
8	10 2 23.01	1.9826	15 33 45.6	13.000
9	10 4 21.80	1.9772	15 20 43.8	13.058
10	10 6 20.28	1.9719	15 7 38.6	13.115
11	10 8 18.44	1.9666	14 54 30.0	13.171
12	10 10 16.28	1.9614	14 41 18.1	13.226
13	10 12 13.81	1.9563	14 28 2.9	13.280
14	10 14 11.04	1.9513	14 14 44.5	13.332
15	10 16 7.98	1.9464	14 1 23.0	13.383
16	10 18 4.62	1.9415	13 47 58.5	13.433
17	10 20 0.96	1.9366	13 34 31.1	13.482
18	10 21 57.01	1.9318	13 21 0.7	13.530
19	10 23 52.77	1.9270	13 7 27.5	13.576
20	10 25 48.25	1.9223	12 53 51.6	13.620
21	10 27 43.45	1.9177	12 40 13.1	13.664
22	10 29 38.38	1.9132	12 26 32.0	13.707
23	10 31 33.04	1.9088	12 12 48.3	13.749
24	10 33 27.44	1.9045	N.11 59 2.1	13.790

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 33 27.44	1.9045	N.11 59 2.1	13.790
1	10 35 21.58	1.9002	11 45 13.5	13.829
2	10 37 15.46	1.8959	11 31 22.6	13.867
3	10 39 9.08	1.8916	11 17 29.4	13.905
4	10 41 2.45	1.8874	11 3 34.0	13.942
5	10 42 55.57	1.8833	10 49 36.4	13.977
6	10 44 48.45	1.8793	10 35 36.7	14.011
7	10 46 41.09	1.8754	10 21 35.0	14.044
8	10 48 33.50	1.8715	10 7 31.4	14.076
9	10 50 25.68	1.8677	9 53 25.9	14.107
10	10 52 17.63	1.8640	9 39 18.5	14.138
11	10 54 9.36	1.8604	9 25 9.3	14.167
12	10 56 0.88	1.8568	9 10 58.4	14.195
13	10 57 52.18	1.8533	8 56 45.9	14.222
14	10 59 43.27	1.8499	8 42 31.8	14.248
15	11 1 34.16	1.8465	8 28 16.1	14.273
16	11 3 24.85	1.8432	8 13 59.0	14.297
17	11 5 15.34	1.8400	7 59 40.5	14.320
18	11 7 5.64	1.8368	7 45 20.6	14.342
19	11 8 55.75	1.8337	7 30 59.4	14.363
20	11 10 45.68	1.8307	7 16 37.0	14.383
21	11 12 35.43	1.8277	7 2 13.4	14.402
22	11 14 25.00	1.8248	6 47 48.7	14.420
23	11 16 14.40	1.8220	N. 6 33 23.0	14.437

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 18 3.64	1.8192	N. 6 18 56.3	14.453
1	11 19 52.71	1.8165	6 4 28.6	14.469
2	11 21 41.62	1.8139	5 50 0.0	14.483
3	11 23 30.38	1.8114	5 35 30.6	14.497
4	11 25 18.99	1.8089	5 21 0.4	14.509
5	11 27 7.45	1.8065	5 6 29.5	14.520
6	11 28 55.77	1.8042	4 51 58.0	14.531
7	11 30 43.95	1.8019	4 37 25.8	14.541
8	11 32 32.00	1.7997	4 22 53.1	14.550
9	11 34 19.92	1.7976	4 8 19.9	14.558
10	11 36 7.71	1.7955	3 53 46.2	14.565
11	11 37 55.38	1.7936	3 39 12.1	14.571
12	11 39 42.94	1.7917	3 24 37.7	14.576
13	11 41 30.39	1.7899	3 10 3.0	14.580
14	11 43 17.73	1.7882	2 55 28.1	14.584
15	11 45 4.97	1.7865	2 40 53.0	14.587
16	11 46 52.11	1.7848	2 26 17.7	14.589
17	11 48 39.15	1.7832	2 11 42.3	14.590
18	11 50 26.10	1.7817	1 57 6.9	14.589
19	11 52 12.96	1.7803	1 42 31.6	14.588
20	11 53 59.74	1.7790	1 27 56.3	14.586
21	11 55 46.44	1.7777	1 13 21.2	14.583
22	11 57 33.06	1.7765	0 58 46.3	14.580
23	11 59 19.62	1.7754	0 41 11.6	14.576
24	12 1 6.11	1.7743	N. 0 29 37.2	14.571

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 1 6.11	1.7743	N. 0 29 37.2	14.571
1	12 2 52.54	1.7733	0 15 3.1	14.566
2	12 4 38.91	1.7724	N. 0 0 29.3	14.560
3	12 6 25.23	1.7716	S. 0 14 4.1	14.552
4	12 8 11.50	1.7708	0 28 37.0	14.543
5	12 9 57.73	1.7700	0 43 9.3	14.533
6	12 11 43.91	1.7693	0 57 41.0	14.523
7	12 13 30.05	1.7687	1 12 12.1	14.513
8	12 15 16.16	1.7683	1 26 42.6	14.501
9	12 17 2.25	1.7679	1 41 12.3	14.488
10	12 18 48.31	1.7675	1 55 41.2	14.475
11	12 20 34.35	1.7672	2 10 9.3	14.462
12	12 22 20.37	1.7669	2 24 36.6	14.447
13	12 24 6 38	1.7667	2 39 2.9	14.431
14	12 25 52.38	1.7666	2 53 28.3	14.415
15	12 27 38.37	1.7666	3 7 52.7	14.397
16	12 29 24.37	1.7666	3 22 16.0	14.379
17	12 31 10.37	1.7667	3 36 38.2	14.361
18	12 32 56.37	1.7668	3 50 59.3	14.342
19	12 34 42.38	1.7670	4 5 19.2	14.321
20	12 36 28.41	1.7673	4 19 37.8	14.299
21	12 38 14.46	1.7677	4 33 55.1	14.277
22	12 40 0.54	1.7682	4 48 11.1	14.255
23	12 41 46.65	1.7687	S. 5 2 25.7	14.231

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 43 32.79	1.7692	S. 5 16 38.8	14.206
1	12 45 18.96	1.7698	5 30 50.4	14.181
2	12 47 5.17	1.7705	5 45 0.5	14.156
3	12 48 51.43	1.7713	5 59 9.1	14.130
4	12 50 37.73	1.7721	6 13 16.1	14.102
5	12 52 24.08	1.7730	6 27 21.4	14.074
6	12 54 10.49	1.7740	6 41 25.0	14.046
7	12 55 56.96	1.7751	6 55 26.8	14.015
8	12 57 43.50	1.7762	7 9 26.8	13.985
9	12 59 30.11	1.7774	7 23 25.0	13.954
10	13 1 16.79	1.7786	7 37 21.3	13.922
11	13 3 3.54	1.7798	7 51 15.6	13.889
12	13 4 50.37	1.7812	8 5 7.9	13.855
13	13 6 37.29	1.7827	8 18 58.2	13.821
14	13 8 24.29	1.7842	8 32 46.4	13.786
15	13 10 11.38	1.7857	8 46 32.5	13.750
16	13 11 58.57	1.7872	9 0 16.4	13.713
17	13 13 45.85	1.7888	9 13 58.1	13.676
18	13 15 33.23	1.7905	9 27 37.6	13.638
19	13 17 20.72	1.7923	9 41 14.7	13.599
20	13 19 8.32	1.7942	9 54 49.5	13.560
21	13 20 56.03	1.7962	10 8 21.9	13.519
22	13 22 43.86	1.7982	10 21 51.8	13.478
23	13 24 31.81	1.8002	10 35 19.2	13.437
24	13 26 19.89	1.8023	S.10 48 44.2	13.396

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	13 26 19.89	1.8023	S.10 48 44.2	13.396
1	13 28 8.09	1.8045	11 2 6.6	13.351
2	13 29 56.43	1.8067	11 15 26.3	13.306
3	13 31 44.90	1.8090	11 28 43.3	13.261
4	13 33 33.51	1.8113	11 41 57.6	13.215
5	13 35 22.26	1.8137	11 55 9.1	13.168
6	13 37 11.16	1.8162	12 8 17.8	13.120
7	13 39 0.21	1.8187	12 21 23.6	13.072
8	13 40 49.41	1.8213	12 34 26.5	13.024
9	13 42 38.77	1.8240	12 47 26.5	12.975
10	13 44 28.29	1.8267	13 0 23.5	12.924
11	13 46 17.98	1.8294	13 13 17.4	12.872
12	13 48 7.83	1.8322	13 26 8.2	12.820
13	13 49 57.85	1.8352	13 38 55.8	12.767
14	13 51 48.05	1.8382	13 51 40.2	12.714
15	13 53 38.43	1.8412	14 4 21.5	12.660
16	13 55 28.99	1.8442	14 16 59.5	12.605
17	13 57 19.74	1.8473	14 29 34.1	12.549
18	13 59 10.67	1.8505	14 42 5.3	12.492
19	14 1 1.79	1.8537	14 54 33.1	12.434
20	14 2 53.11	1.8570	15 6 57.4	12.376
21	14 4 44.63	1.8603	15 19 18.2	12.317
22	14 6 36.35	1.8637	15 31 35.4	12.257
23	14 8 28.28	1.8672	S.15 43 49.0	12.196

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 10 20.42	1.8707	S.15 55 58.9	12.134
1	14 12 12.77	1.8742	16 8 5.1	12.072
2	14 14 5.33	1.8777	16 20 7.5	12.009
3	14 15 58.10	1.8813	16 32 6.1	11.945
4	14 17 51.09	1.8850	16 44 0.9	11.880
5	14 19 44.31	1.8888	16 55 51.7	11.814
6	14 21 37.75	1.8926	17 7 38.6	11.747
7	14 23 31.42	1.8965	17 19 21.4	11.680
8	14 25 25.33	1.9004	17 31 0.2	11.612
9	14 27 19.47	1.9043	17 42 34.9	11.543
10	14 29 13.85	1.9083	17 54 5.4	11.473
11	14 31 8.47	1.9124	18 5 31.7	11.402
12	14 33 3.34	1.9166	18 16 53.7	11.331
13	14 34 58.46	1.9207	18 28 11.4	11.259
14	14 36 53.83	1.9248	18 39 24.8	11.186
15	14 38 49.44	1.9290	18 50 33.8	11.112
16	14 40 45.31	1.9333	19 1 38.3	11.037
17	14 42 41.44	1.9377	19 12 38.3	10.962
18	14 44 37.83	1.9420	19 23 33.7	10.885
19	14 46 34.48	1.9464	19 34 24.5	10.807
20	14 48 31.40	1.9508	19 45 10.6	10.729
21	14 50 28.58	1.9552	19 55 52.0	10.650
22	14 52 26.03	1.9597	20 6 28.6	10.570
23	14 54 23.75	1.9643	20 17 0.4	10.489
24	14 56 21.75	1.9689	S.20 27 27.3	10.407

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 56 21.75	1.9689	S.20 27 27.3	10.407
1	14 58 20.02	1.9735	20 37 49.3	10.325
2	15 0 18.57	1.9782	20 38 6.3	10.242
3	15 2 17.41	1.9829	20 58 18.3	10.157
4	15 4 16.53	1.9876	21 8 25.2	10.072
5	15 6 15.93	1.9923	21 18 26.9	9.986
6	15 8 15.61	1.9971	21 28 23.4	9.897
7	15 10 15.58	2.0019	21 38 14.6	9.809
8	15 12 15.84	2.0068	21 48 0.5	9.721
9	15 14 16.40	2.0117	21 57 41.1	9.632
10	15 16 17.25	2.0166	22 7 16.3	9.542
11	15 18 18.39	2.0214	22 16 46.1	9.451
12	15 20 19.82	2.0263	22 26 10.4	9.358
13	15 22 21.55	2.0313	22 35 29.1	9.264
14	15 24 23.58	2.0363	22 44 42.1	9.169
15	15 26 25.91	2.0414	22 53 49.4	9.074
16	15 28 28.55	2.0465	23 2 51.0	8.978
17	15 30 31.49	2.0515	23 11 46.8	8.881
18	15 32 34.73	2.0566	23 20 36.8	8.783
19	15 34 38.28	2.0617	23 29 20.8	8.684
20	15 36 42.13	2.0668	23 37 58.9	8.585
21	15 38 46.29	2.0719	23 46 31.0	8.484
22	15 40 50.76	2.0770	23 54 57.0	8.383
23	15 42 55.54	2.0821	S.24 3 16.9	8.280

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 45 0.62	2.0872	S.24 11 30.7	8.177
1	15 47 6.01	2.0924	24 19 38.2	8.072
2	15 49 11.71	2.0976	24 27 39.4	7.967
3	15 51 17.72	2.1027	24 35 34.3	7.861
4	15 53 24.04	2.1079	24 43 22.8	7.754
5	15 55 30.67	2.1131	24 51 4.8	7.646
6	15 57 37.61	2.1182	24 58 40.3	7.537
7	15 59 44.86	2.1234	25 6 9.3	7.427
8	16 1 52.42	2.1285	25 13 31.6	7.316
9	16 4 0.28	2.1336	25 20 47.2	7.204
10	16 6 8.45	2.1387	25 27 56.1	7.092
11	16 8 16.93	2.1439	25 34 58.2	6.978
12	16 10 25.72	2.1491	25 41 53.5	6.864
13	16 12 34.82	2.1542	25 48 41.9	6.748
14	16 14 44.22	2.1592	25 55 23.3	6.632
15	16 16 53.92	2.1642	26 1 57.7	6.515
16	16 19 3.93	2.1693	26 8 25.1	6.397
17	16 21 14.24	2.1743	26 14 45.3	6.278
18	16 23 24.85	2.1793	26 20 58.4	6.158
19	16 25 35.76	2.1844	26 27 4.3	6.037
20	16 27 46.98	2.1894	26 33 2.9	5.916
21	16 29 58.50	2.1944	26 38 54.2	5.793
22	16 32 10.31	2.1993	26 44 38.1	5.669
23	16 34 22.41	2.2042	26 50 14.5	5.544
24	16 36 34.81	2.2091	S.26 55 43 4	5.419

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 36 34.81	2.2091	S.26 55 43.4	5.419
1	16 38 47.50	2.2139	27 1 4.8	5.293
2	16 41 0.48	2.2187	27 6 18.6	5.167
3	16 43 13.75	2.2235	27 11 24.8	5.039
4	16 45 27.30	2.2282	27 16 23.3	4.910
5	16 47 41.13	2.2329	27 21 14.0	4.780
6	16 49 55.25	2.2376	27 25 56.9	4.649
7	16 52 9.64	2.2422	27 30 31 9	4.517
8	16 54 24.31	2.2467	27 34 59.0	4.385
9	16 56 39.25	2.2512	27 39 18 2	4.253
10	16 58 54.46	2.2557	27 43 29.4	4.120
11	17 1 9.94	2.2602	27 47 32.6	3.986
12	17 3 25.69	2.2646	27 51 27.7	3.850
13	17 5 41.69	2.2689	27 55 14.6	3.713
14	17 7 57.95	2.2732	27 58 53.3	3.576
15	17 10 14.47	2.2774	28 2 23.7	3.438
16	17 12 31.24	2.2815	28 5 45.8	3.300
17	17 14 48.25	2.2855	28 8 59.6	3.161
18	17 17 5.50	2.2895	28 12 5.1	3.021
19	17 19 22.99	2.2935	28 15 2.1	2.880
20	17 21 40.72	2.2974	28 17 50.6	2.738
21	17 23 58.68	2.3012	28 20 30.6	2.596
22	17 26 16.87	2.3050	28 23 2.1	2.453
23	17 28 35.28	2.3087	S.28 25 25.0	2.309

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 30 53.91	2.3123	S.28 27 39.2	2.164
1	17 33 12.75	2.3159	28 29 44.7	2.019
2	17 35 31.81	2.3194	28 31 41.5	1.874
3	17 37 51.08	2.3227	28 33 29.6	1.727
4	17 40 10.54	2.3260	28 35 8.8	1.580
5	17 42 30.19	2.3292	28 36 39.2	1.432
6	17 44 50.04	2.3324	28 38 0.7	1.284
7	17 47 10.08	2.3355	28 39 13.3	1.135
8	17 49 30.31	2.3386	28 40 16.9	0.986
9	17 51 50.71	2.3414	28 41 11.6	0.837
10	17 54 11.28	2.3443	28 41 57.3	0.686
11	17 56 32.02	2.3471	28 42 33.9	0.535
12	17 58 52.93	2.3498	28 43 1.4	0.383
13	18 1 14.00	2.3524	28 43 19.8	0.231
14	18 3 35.22	2.3548	28 43 29.1	0.078
15	18 5 56.58	2.3572	28 43 29.2	0.075
16	18 8 18.08	2.3595	28 43 20.1	0.228
17	18 10 39.72	2.3617	28 43 1.8	0.382
18	18 13 1.49	2.3639	28 42 34.2	0.537
19	18 15 23.39	2.3659	28 41 57.3	0.692
20	18 17 45.40	2.3678	28 41 11.1	0.847
21	18 20 7.53	2.3697	28 40 15.6	1.003
22	18 22 29.77	2.3715	28 39 10.7	1.159
23	18 24 52.11	2.3732	28 37 56.5	1.315
24	18 27 14.55	2.3748	S.28 36 32.9	1.472

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	18 27 14.55	2.3748	S.28 36 32.9	1.472
1	18 29 37.09	2.3763	28 34 59.9	1.629
2	18 31 59.71	2.3777	28 33 17.4	1.786
3	18 34 22.41	2.3790	28 31 25.5	1.943
4	18 36 45.19	2.3802	28 29 24.2	2.101
5	18 39 8.04	2.3813	28 27 13.4	2.260
6	18 41 30.95	2.3823	28 24 53.0	2.418
7	18 43 53.92	2.3832	28 22 23.2	2.577
8	18 46 16.94	2.3841	28 19 43.9	2.735
9	18 48 40.01	2.3848	28 16 55.0	2.894
10	18 51 3.12	2.3855	28 13 56.6	3.053
11	18 53 26.27	2.3861	28 10 48.7	3.212
12	18 55 49.45	2.3865	28 7 31.2	3.371
13	18 58 12.65	2.3868	28 4 4.2	3.529
14	19 0 35.87	2.3870	28 0 27.7	3.688
15	19 2 59.10	2.3872	27 56 41.6	3.847
16	19 5 22.34	2.3874	27 52 46.0	4.007
17	19 7 45.59	2.3874	27 48 40.8	4.167
18	19 10 8.83	2.3873	27 44 26.0	4.326
19	19 12 32.06	2.3871	27 40 1.7	4.485
20	19 14 55.28	2.3869	27 35 27.8	4.643
21	19 17 18.49	2.3866	27 30 44.4	4.802
22	19 19 41.67	2.3861	27 25 51.5	4.962
23	19 22 4.82	2.3856	S.27 20 49.0	5.121

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 24 27.94	2.3850	S.27 15 37.0	5.279
1	19 26 51.02	2.3842	27 10 15.5	5.437
2	19 29 14.05	2.3834	27 4 44.5	5.596
3	19 31 37.03	2.3826	26 59 4.0	5.754
4	19 33 59.96	2.3817	26 53 14.0	5.911
5	19 36 22.84	2.3808	26 47 14.6	6.068
6	19 38 45.66	2.3797	26 41 5.8	6.226
7	19 41 8.41	2.3785	26 34 47.5	6.383
8	19 43 31.08	2.3772	26 28 19.8	6.540
9	19 45 53.67	2.3758	26 21 42.7	6.696
10	19 48 16.18	2.3745	26 14 56.2	6.852
11	19 50 38.61	2.3731	26 8 0.4	7.007
12	19 53 0.95	2.3716	26 0 55.3	7.162
13	19 55 23.20	2.3701	25 53 40.9	7.317
14	19 57 45 36	2.3685	25 46 17.2	7.472
15	20 0 7.42	2.3667	25 38 44.2	7.626
16	20 2 29.37	2.3649	25 31 2.0	7.779
17	20 4 51.21	2.3631	25 23 10.6	7.932
18	20 7 12.94	2.3612	25 15 10.1	8.085
19	20 9 34.55	2.3592	25 7 0.4	8.237
20	20 11 56.04	2.3572	24 58 41.6	8.389
21	20 14 17.42	2.3552	24 50 13.7	8.540
22	20 16 38.67	2.3531	24 41 36.8	8.690
23	20 18 59.79	2.3509	24 32 50.9	8.840
24	20 21 20.77	2.3486	S.24 23 56.0	8.989

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	20 21 20.77	2.3486	S.24 23 56.0	8.989
1	20 23 41.62	2.3461	24 14 52.2	9.137
2	20 26 2.34	2.3442	24 5 39.6	9.284
3	20 28 22.92	2.3419	23 56 18.1	9.431
4	20 30 43.36	2.3395	23 46 47.8	9.577
5	20 33 3.65	2.3370	23 37 8.8	9.722
6	20 35 23.80	2.3346	23 27 21.1	9.867
7	20 37 43.80	2.3321	23 17 24.7	10.012
8	20 40 3.65	2.3296	23 7 19.7	10.155
9	20 42 23.35	2.3271	22 57 6.1	10.297
10	20 44 42.90	2.3245	22 46 44.0	10.439
11	20 47 2.29	2.3218	22 36 13.4	10.580
12	20 49 21.52	2.3192	22 25 34.4	10.720
13	20 51 40.60	2.3166	22 14 47.0	10.859
14	20 53 59.52	2.3139	22 3 51.3	10.997
15	20 56 18.27	2.3112	21 52 47.3	11.135
16	20 58 36.86	2.3085	21 41 35.1	11.271
17	21 0 55.29	2.3058	21 30 14.8	11.406
18	21 3 13.56	2.3031	21 18 46.4	11.541
19	21 5 31.67	2.3004	21 7 9.9	11.675
20	21 7 49.62	2.2977	20 55 25.4	11.807
21	21 10 7.40	2.2949	20 43 33.0	11.939
22	21 12 25.01	2.2922	20 31 32.7	12.071
23	21 14 42.46	2.2895	S.20 19 24.5	12.202

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 16 59.75	2.2867	S.20 7 8.5	12.330
1	21 19 16.87	2.2839	19 54 44.9	12.457
2	21 21 33.82	2.2812	19 42 13.7	12.582
3	21 23 50.61	2.2784	19 29 35.0	12.707
4	21 26 7.23	2.2757	19 16 48.8	12.832
5	21 28 23.69	2.2730	19 3 55.2	12.955
6	21 30 39.99	2.2702	18 50 54.2	13.077
7	21 32 56.12	2.2675	18 37 45.9	13.199
8	21 35 12.09	2.2649	18 24 30.3	13.319
9	21 37 27.91	2.2622	18 11 7.6	13.437
10	21 39 43.56	2.2595	17 57 37.8	13.555
11	21 41 59.05	2.2569	17 44 1.0	13.671
12	21 44 14.39	2.2543	17 30 17.3	13.786
13	21 46 29.57	2.2517	17 16 26 7	13.899
14	21 48 44.59	2.2491	17 2 29.4	14.011
15	21 50 59.46	2.2466	16 48 25.4	14.122
16	21 53 14.18	2.2441	16 34 14.8	14.232
17	21 55 28.75	2.2416	16 19 57.6	14.341
18	21 57 43.17	2.2391	16 5 33.9	14.448
19	21 59 57.44	2.2366	15 51 3.8	14.554
20	22 2 11.56	2.2342	15 36 27.4	14.659
21	22 4 25.54	2.2319	15 21 44.7	14.763
22	22 6 39.38	2.2296	15 6 55.8	14.866
23	22 8 53.09	2.2273	14 52 0.8	14.966
24	22 11 6.66	2.2251	S.14 36 59.9	15.064

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 11 6.66	2.2251	S.14 36 59.9	15.064
1	22 13 20.10	2.2229	14 21 53.1	15.162
2	22 15 33.41	2.2207	14 6 40.5	15.258
3	22 17 46.59	2.2186	13 51 22.1	15.354
4	22 19 59.64	2.2165	13 35 58.0	15.447
5	22 22 12.57	2.2145	13 20 28.4	15.539
6	22 24 25.38	2.2125	13 4 53.3	15.630
7	22 26 38.07	2.2106	12 49 12.8	15.719
8	22 28 50.65	2.2087	12 33 27.0	15.807
9	22 31 3.12	2.2069	12 17 36.0	15.893
10	22 33 15.48	2.2051	12 1 39.8	15.978
11	22 35 27.74	2.2034	11 45 38.6	16.061
12	22 37 39.89	2.2017	11 29 32.5	16.142
13	22 39 51.95	2.2001	11 13 21.5	16.222
14	22 42 3.91	2.1986	10 57 5.8	16.301
15	22 44 15.78	2.1971	10 40 45.4	16.378
16	22 46 27.56	2.1957	10 24 20.4	16.453
17	22 48 39.26	2.1943	10 7 51.0	16.526
18	22 50 50.88	2.1930	9 51 17.3	16.598
19	22 53 2.42	2.1918	9 34 39.3	16.669
20	22 55 13.89	2.1906	9 17 57.0	16.739
21	22 57 25.29	2.1895	9 1 10.6	16.806
22	22 59 36.63	2.1885	8 44 20.3	16.871
23	23 1 47.91	2.1875	S. 8 27 26.1	16.935

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 3 59.13	2.1865	S. 8 10 28.1	16.997
1	23 6 10.29	2.1856	7 53 26.5	17.057
2	23 8 21.40	2.1848	7 36 21.3	17.116
3	23 10 32.47	2.1842	7 19 12.6	17.173
4	23 12 43.50	2.1836	7 2 0.5	17.229
5	23 14 54.50	2.1830	6 44 45.1	17.283
6	23 17 5.46	2.1825	6 27 26.5	17.335
7	23 19 16.39	2.1821	6 10 4.9	17.384
8	23 21 27.30	2.1818	5 52 40.4	17.432
9	23 23 38.20	2.1815	5 35 13.0	17.479
10	23 25 49.08	2.1813	5 17 42.9	17.524
11	23 27 59.95	2.1812	5 0 10.1	17.567
12	23 30 10.82	2.1812	4 42 34.8	17.608
13	23 32 21.69	2.1812	4 24 57.1	17.647
14	23 34 32.56	2.1812	4 7 17.1	17.685
15	23 36 43.43	2.1814	3 49 34.9	17.721
16	23 38 54.32	2.1817	3 31 50.6	17.754
17	23 41 5.23	2.1820	3 14 4.4	17.786
18	23 43 16.16	2.1824	2 56 16.3	17.816
19	23 45 27.12	2.1829	2 38 26.5	17.844
20	23 47 38.11	2.1835	2 20 35.1	17.870
21	23 49 49.14	2.1842	2 2 42.1	17.895
22	23 52 0.21	2.1849	1 44 47.7	17.917
23	23 54 11.32	2.1856	1 26 52.0	17.938
24	23 56 22.46	2.1864	S. 1 8 55.1	17.957

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 25.					FRIDAY 27.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	23 56 22.48	2.1864	S. 1 8 55.1	17.967	0	1 43 52.80	2.3221	N.12 56 16.5	16.464
1	23 58 33.69	2.1874	0 50 57.2	17.978	1	1 46 12.26	2.3266	13 12 41.9	16.382
2	0 0 44.97	2.1885	0 32 58.3	17.988	2	1 48 31.99	2.3312	13 29 2.3	16.297
3	0 2 56.32	2.1897	S. 0 14 58.6	18.001	3	1 50 52.00	2.3358	13 45 17.6	16.211
4	0 5 7.74	2.1909	N. 0 3 1.8	18.012	4	1 53 12.29	2.3405	14 1 27.6	16.123
5	0 7 19.23	2.1922	0 21 2.8	18.021	5	1 55 32.86	2.3452	14 17 32.2	16.031
6	0 9 30.80	2.1936	0 39 4.3	18.027	6	1 57 53.72	2.3500	14 33 31.3	15.936
7	0 11 42.46	2.1951	0 57 6.1	18.032	7	2 0 14.86	2.3548	14 49 24.8	15.844
8	0 13 54.21	2.1966	1 15 8.2	18.036	8	2 2 36 30	2.3597	15 5 12.6	15.748
9	0 16 6.05	2.1982	1 33 10.4	18.037	9	2 4 58.03	2.3647	15 20 54.6	15.649
10	0 18 17.99	2.1999	1 51 12.6	18.035	10	2 7 20.06	2.3696	15 36 30.5	15.548
11	0 20 30.04	2.2017	2 9 14.6	18.032	11	2 9 42.38	2.3745	15 52 0.3	15.445
12	0 22 42.20	2.2036	2 27 16.4	18.027	12	2 12 5.00	2.3795	16 7 23.9	15.340
13	0 24 54.47	2.2055	2 45 17.9	18.021	13	2 14 27.92	2.3846	16 22 41.1	15.232
14	0 27 6.86	2.2076	3 3 18.9	18.012	14	2 16 51 15	2.3897	16 37 51.8	15.123
15	0 29 19.38	2.2097	3 21 19.3	18.000	15	2 19 14.68	2.3948	16 52 55.9	15.012
16	0 31 32.03	2.2119	3 39 18.9	17.986	16	2 21 38.52	2.3999	17 7 53.3	14.900
17	0 33 44.81	2.2141	3 57 17.6	17.970	17	2 24 2.67	2.4050	17 22 43.9	14.785
18	0 35 57.72	2.2164	4 15 15.3	17.953	18	2 26 27.12	2.4102	17 37 27.5	14.667
19	0 38 10.78	2.2189	4 33 12.0	17.936	19	2 28 51.89	2.4154	17 52 4.0	14.548
20	0 40 23.99	2.2214	4 51 7.6	17.916	20	2 31 16.97	2.4206	18 6 33.3	14.427
21	0 42 37.35	2.2240	5 9 1.9	17.892	21	2 33 42.36	2.4258	18 20 55.3	14.304
22	0 44 50.87	2.2267	5 26 54.6	17.865	22	2 36 8.07	2.4310	18 35 9.8	14.179
23	0 47 4.56	2.2295	N. 5 44 45.7	17.837	23	2 38 34.09	2.4362	N.18 49 16.8	14.053
	THURSDAY 26.					SATURDAY 28.			
0	0 49 18.41	2.2322	N. 6 2 35.1	17.807	0	2 41 0.42	2.4415	N.19 3 16.2	13.925
1	0 51 32.43	2.2351	6 20 22.6	17.775	1	2 43 27.07	2.4467	19 17 7.8	13.794
2	0 53 46.63	2.2382	6 38 8.1	17.741	2	2 45 54.03	2.4519	19 30 51.5	13.662
3	0 56 1.02	2.2413	6 55 51.5	17.705	3	2 48 21.30	2.4572	19 44 27.2	13.527
4	0 58 15.59	2.2445	7 13 32.7	17.667	4	2 50 48.89	2.4624	19 57 54.8	13.392
5	1 0 30.35	2.2477	7 31 11.6	17.627	5	2 53 16.79	2.4676	20 11 14.2	13.254
6	1 2 45.31	2.2510	7 48 48.0	17.585	6	2 55 45.00	2.4728	20 24 25.3	13.115
7	1 5 0 47	2.2543	8 6 21.8	17.541	7	2 58 13.52	2.4780	20 37 28.0	12.973
8	1 7 15.83	2.2577	8 23 52.9	17.494	8	3 0 42.36	2.4832	20 50 22.1	12.829
9	1 9 31.39	2.2612	8 41 21.1	17.446	9	3 3 11.51	2.4884	21 3 7.5	12.684
10	1 11 47.17	2.2648	8 58 46.4	17.396	10	3 5 40.97	2.4935	21 15 44.2	12.538
11	1 14 3.17	2.2685	9 16 8.6	17.343	11	3 8 10.73	2.4986	21 28 12.1	12.391
12	1 16 19.39	2.2722	9 33 27.6	17.288	12	3 10 40.80	2.5037	21 40 31.1	12.241
13	1 18 35.84	2.2760	9 50 43.2	17.231	13	3 13 11.17	2.5087	21 52 41.0	12.089
14	1 20 52.52	2.2799	10 7 55.3	17.171	14	3 15 41.84	2.5137	22 4 41.8	11.937
15	1 23 9.43	2.2838	10 25 3.8	17.109	15	3 18 12.81	2.5187	22 16 33.4	11.782
16	1 25 26.58	2.2878	10 42 8.5	17.046	16	3 20 44.08	2.5236	22 28 15.6	11.625
17	1 27 43.97	2.2919	10 59 9.3	16.981	17	3 23 15.64	2.5284	22 39 48.4	11.467
18	1 30 1.61	2.2960	11 16 6.2	16.914	18	3 25 47.49	2.5332	22 51 11.6	11.307
19	1 32 19.49	2.3002	11 32 59.0	16.844	19	3 28 19.63	2.5380	23 2 25.2	11.147
20	1 34 37.63	2.3045	11 49 47.5	16.772	20	3 30 52.05	2.5427	23 13 29.2	10.985
21	1 36 56.03	2.3088	12 6 31.6	16.698	21	3 33 24.75	2.5473	23 24 23.4	10.820
22	1 39 14.69	2.3132	12 23 11.2	16.622	22	3 35 57.72	2.5519	23 35 7.6	10.654
23	1 41 33.61	2.3176	12 39 46.2	16.544	23	3 38 30.97	2.5564	23 45 41.8	10.487
24	1 43 52.80	2.3221	N.12 56 16.5	16.464	24	3 41 4.49	2.5608	N.23 56 6.0	10.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 41 4.49	2.5608	N.23 56 6.0	10.319
1	3 43 38.27	2.5652	24 6 20.1	10.150
2	3 46 12.31	2.5695	24 16 24.0	9.979
3	3 48 46.61	2.5737	24 26 17.6	9.807
4	3 51 21.15	2.5778	24 36 0.8	9.632
5	3 53 55.94	2.5818	24 45 33.5	9.457
6	3 56 30.97	2.5857	24 54 55.7	9.281
7	3 59 6.23	2.5896	25 4 7.4	9.105
8	4 1 41.72	2.5933	25 13 8.4	8.927
9	4 4 17.43	2.5970	25 21 58.6	8.747
10	4 6 53.36	2.6006	25 30 38.0	8.567
11	4 9 29.50	2.6040	25 39 6.6	8.386
12	4 12 5.84	2.6073	25 47 24.3	8.203
13	4 14 42.38	2.6106	25 55 31.0	8.020
14	4 17 19.11	2.6137	26 3 26.7	7.836
15	4 19 56.02	2.6166	26 11 11.3	7.651
16	4 22 33.10	2.6194	26 18 44.8	7.464
17	4 25 10.35	2.6221	26 26 7.0	7.277
18	4 27 47.77	2.6248	26 33 18.0	7.089
19	4 30 25.34	2.6273	26 40 17.7	6.901
20	4 33 3.05	2.6297	26 47 6.1	6.712
21	4 35 40.90	2.6319	26 53 43.1	6.522
22	4 38 18.88	2.6340	27 0 8.7	6.332
23	4 40 56.98	2.6359	N.27 6 22.9	6.141

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 43 35.19	2.6377	N.27 12 25.6	5.949
1	4 46 13.51	2.6394	27 18 16.8	5.757
2	4 48 51.92	2.6409	27 23 56.4	5.564
3	4 51 30.42	2.6423	27 29 24.5	5.371
4	4 54 9.00	2.6435	27 34 41.0	5.178
5	4 56 47.64	2.6446	27 39 45.9	4.984
6	4 59 26.34	2.6455	27 44 39.1	4.790
7	5 2 5.10	2.6463	27 49 20.7	4.596
8	5 4 43.90	2.6469	27 53 50.6	4.401
9	5 7 22.73	2.6473	27 58 8.8	4.206
10	5 10 1.58	2.6476	28 2 15.3	4.011
11	5 12 40.44	2.6478	28 6 10.1	3.816
12	5 15 19.31	2.6478	28 9 53.2	3.621
13	5 17 58.18	2.6476	28 13 24.6	3.426
14	5 20 37.03	2.6473	28 16 44.3	3.231
15	5 23 15.86	2.6468	28 19 52.3	3.036
16	5 25 54.65	2.6461	28 22 48.6	2.840
17	5 28 33.39	2.6452	28 25 33.1	2.645
18	5 31 12.08	2.6442	28 28 5.9	2.450
19	5 33 50.71	2.6431	28 30 27.1	2.256
20	5 36 29.27	2.6419	28 32 36.6	2.062
21	5 39 7.74	2.6404	28 34 34.5	1.867
22	5 41 46.12	2.6388	28 36 20.7	1.673
23	5 44 24.40	2.6370	28 37 55.3	1.480
24	5 47 2.57	2.6350	N.28 39 18.3	1.288

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 47 2.57	2.6350	N.28 39 18.3	1.288
1	5 49 40.61	2.6329	28 40 29.8	1.096
2	5 52 18.52	2.6306	28 41 29.8	0.904
3	5 54 56.29	2.6282	28 42 18.3	0.712
4	5 57 33.91	2.6256	28 42 55.3	0.521
5	6 0 11.37	2.6229	28 43 20.8	0.330
6	6 2 48.66	2.6200	28 43 34.9	0.140
7	6 5 25.77	2.6170	28 43 37.6	0.049
8	6 8 2.70	2.6138	28 43 29.0	0.237
9	6 10 39.43	2.6105	28 43 9.1	0.425
10	6 13 15.96	2.6070	28 42 38.0	0.612
11	6 15 52.27	2.6033	28 41 55.7	0.798
12	6 18 28.36	2.5995	28 41 2.2	0.984
13	6 21 4.22	2.5955	28 39 57.5	1.169
14	6 23 39.83	2.5914	28 38 41.8	1.353
15	6 26 15.19	2.5872	28 37 15.1	1.536
16	6 28 50.30	2.5829	28 35 37.5	1.717
17	6 31 25.15	2.5785	28 33 49.0	1.898
18	6 33 59.73	2.5739	28 31 49.7	2.078
19	6 36 34.02	2.5691	28 29 39.6	2.257
20	6 39 8.02	2.5642	28 27 18.8	2.436
21	6 41 41.73	2.5593	28 24 47.3	2.613
22	6 44 15.14	2.5542	28 22 5.2	2.789
23	6 46 48.24	2.5490	N.28 19 12.6	2.963

WEDNESDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 49 21.02	2.5436	N.28 16 9.6	3.137

PHASES OF THE MOON.

	Day.	h.	m.
☽ First Quarter, .	2	16	30.5
○ Full Moon, . .	10	4	17.2
☾ Last Quarter, . .	18	9	3.5
● New Moon, . .	25	10	28.7

	Day.	h.
☾ Apogee, ...	14	4.5
☾ Perigee, ...	26	12.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	67 54 35	2566	69 34 16	2577	71 13 43	2588	72 52 55	2598
	Mars	W.	43 26 9	2486	45 7 42	2496	46 49 1	2506	48 30 6	2516
	Jupiter	W.	36 39 14	2320	38 24 44	2330	40 10 0	2340	41 55 1	2350
	Venus	W.	21 28 39	2561	23 8 27	2572	24 48 1	2582	26 27 21	2592
	Saturn	E.	48 42 9	2283	46 55 45	2295	45 9 38	2307	43 23 48	2320
	Pollux	E.	62 16 51	2250	60 29 38	2260	58 42 39	2270	56 55 55	2279
	Regulus	E.	99 2 24	2253	97 15 15	2263	95 28 21	2272	93 41 41	2283
2	Sun	W.	81 5 18	2652	82 43 2	2663	84 20 31	2675	85 57 45	2686
	Mars	W.	56 51 51	2570	58 31 27	2582	60 10 47	2593	61 49 52	2604
	Jupiter	W.	50 36 30	2402	52 20 2	2412	54 3 19	2422	55 46 22	2433
	Venus	W.	34 40 30	2646	36 18 24	2656	37 56 3	2667	39 33 27	2678
	a Arietis	W.	27 38 25	2492	29 19 50	2485	31 1 24	2482	32 43 3	2480
	Saturn	E.	34 39 40	2394	32 55 57	2411	31 12 38	2430	29 29 46	2451
	Pollux	E.	48 5 57	2331	46 20 43	2342	44 35 45	2353	42 51 2	2364
	Regulus	E.	84 52 2	2334	83 6 52	2344	81 21 57	2355	79 37 17	2366
3	Sun	W.	94 0 6	2744	95 35 48	2755	97 11 15	2766	98 46 28	2777
	Mars	W.	70 1 28	2659	71 39 3	2671	73 16 22	2683	74 53 25	2694
	Jupiter	W.	64 17 47	2487	65 59 18	2498	67 40 34	2508	69 21 36	2519
	Venus	W.	47 36 46	2733	49 12 42	2744	50 48 23	2756	52 23 49	2767
	a Arietis	W.	41 11 4	2494	42 52 25	2500	44 33 38	2506	46 14 43	2513
	Regulus	E.	70 57 50	2419	69 14 43	2429	67 31 50	2441	65 49 13	2451
	Spica	E.	124 58 31	2414	123 15 16	2424	121 32 16	2435	119 49 31	2445
4	Sun	W.	106 38 50	2834	108 12 34	2845	109 46 4	2855	111 19 21	2866
	Mars	W.	82 54 59	2749	84 30 34	2760	86 5 54	2770	87 41 1	2781
	Jupiter	W.	77 43 2	2572	79 22 35	2583	81 1 54	2593	82 40 59	2603
	Venus	W.	60 17 23	2821	61 51 23	2831	63 25 10	2842	64 58 44	2852
	a Arietis	W.	54 37 39	2551	56 17 42	2559	57 57 34	2567	59 37 14	2575
	Aldebaran	W.	25 10 53	2873	26 43 46	2845	28 17 16	2820	29 51 18	2801
	Regulus	E.	57 19 55	2504	55 38 48	2516	53 57 56	2526	52 17 19	2536
	Spica	E.	111 19 28	2497	109 38 11	2507	107 57 8	2518	106 16 20	2528
5	Sun	W.	119 2 19	2919	120 34 14	2930	122 5 55	2939	123 37 24	2950
	Mars	W.	95 33 8	2833	97 6 54	2843	98 40 26	2853	100 13 45	2863
	Jupiter	W.	90 52 55	2654	92 30 37	2663	94 8 7	2673	95 45 23	2683
	Venus	W.	72 43 11	2904	74 15 25	2913	75 47 27	2923	77 19 17	2934
	a Arietis	W.	67 52 42	2618	69 31 12	2627	71 9 30	2635	72 47 37	2644
	Aldebaran	W.	37 46 8	2755	39 21 35	2753	40 57 5	2751	42 32 37	2751
	Regulus	E.	43 57 48	2588	42 18 37	2598	40 39 39	2608	39 0 55	2619
	Spica	E.	97 55 45	2577	96 16 18	2587	94 37 5	2596	92 58 5	2605
6	Jupiter	W.	103 48 31	2730	105 24 31	2738	107 0 20	2748	108 35 56	2757
	Venus	W.	84 55 19	2981	86 25 56	2990	87 56 21	2999	89 26 35	3008
	a Arietis	W.	80 55 14	2688	82 32 10	2696	84 8 55	2705	85 45 28	2713
	Aldebaran	W.	50 29 54	2763	52 5 10	2767	53 40 21	2772	55 15 26	2777
	Saturn	W.	20 40 15	2810	22 14 30	2802	23 48 55	2795	25 23 29	2791
	Regulus	E.	30 50 51	2672	29 13 33	2684	27 36 31	2695	25 59 44	2707
	Spica	E.	84 46 14	2652	83 8 29	2660	81 30 56	2669	79 53 35	2678
7	Venus	W.	96 54 58	3052	98 24 6	3060	99 53 4	3069	101 21 51	3078
	a Arietis	W.	93 45 22	2757	95 20 46	2766	96 55 59	2774	98 31 1	2783
	Aldebaran	W.	63 9 7	2806	64 43 29	2811	66 17 43	2818	67 51 48	2825
	Saturn	W.	33 17 19	2788	34 52 3	2792	36 26 41	2796	38 1 14	2800

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun W.	74 31 53	2609	76 10 36	2620	77 49 4	2630	79 27 18	2640
	Mars W.	50 10 57	2527	51 51 33	2538	53 31 54	2548	55 12 0	2559
	Jupiter W.	43 39 48	2359	45 24 21	2370	47 8 39	2380	48 52 42	2391
	Venus W.	28 6 27	2602	29 45 19	2613	31 23 56	2623	33 2 20	2633
	Saturn E.	41 38 17	2333	39 53 6	2347	38 8 15	2362	36 23 46	2378
	Pollux E.	55 9 25	2289	53 23 10	2300	51 37 11	2311	49 51 27	2320
	Regulus E.	91 55 16	2292	90 9 5	2302	88 23 9	2313	86 37 28	2323
2	Sun W.	87 34 44	2698	89 11 27	2709	90 47 55	2720	92 24 8	2732
	Mars W.	63 28 42	2615	65 7 16	2626	66 45 35	2638	68 23 39	2649
	Jupiter W.	57 29 10	2444	59 11 42	2455	60 53 59	2466	62 36 0	2476
	Venus W.	41 10 37	2689	42 47 32	2701	44 24 11	2712	46 0 35	2722
	a Arietis W.	34 24 44	2480	36 6 25	2482	37 48 3	2486	39 29 36	2489
	Saturn E.	27 47 24	2474	26 5 34	2498	24 24 18	2526	22 43 41	2558
	Pollux E.	41 6 35	2375	39 22 24	2386	37 38 29	2397	35 54 50	2408
	Regulus E.	77 52 53	2376	76 8 44	2387	74 24 50	2398	72 41 12	2409
3	Sun W.	100 21 26	2788	101 56 9	2800	103 30 37	2811	105 4 51	2822
	Mars W.	76 30 13	2704	78 6 47	2716	79 43 5	2727	81 19 9	2738
	Jupiter W.	71 2 23	2530	72 42 54	2541	74 23 10	2561	76 3 13	2561
	Venus W.	53 59 0	2778	55 33 57	2788	57 8 40	2799	58 43 9	2811
	a Arietis W.	47 55 38	2520	49 36 24	2527	51 17 0	2535	52 57 25	2543
	Regulus E.	64 6 51	2462	62 24 45	2472	60 42 53	2483	59 1 16	2494
	Spica E.	118 7 1	2456	116 24 46	2466	114 42 45	2477	113 0 59	2487
4	Sun W.	112 52 24	2876	114 25 13	2887	115 57 48	2898	117 30 10	2908
	Mars W.	89 15 54	2792	90 50 34	2802	92 24 59	2813	93 59 10	2823
	Jupiter W.	84 19 50	2613	85 58 27	2624	87 36 50	2634	89 14 59	2643
	Venus W.	66 32 4	2862	68 5 11	2873	69 38 4	2883	71 10 44	2894
	a Arietis W.	61 16 43	2584	62 56 0	2592	64 35 6	2601	66 14 0	2610
	Aldebaran W.	31 25 45	2786	33 0 31	2774	34 35 33	2765	36 10 47	2760
	Regulus E.	50 36 56	2547	48 56 48	2557	47 16 54	2567	45 37 14	2577
	Spica E.	104 35 46	2538	102 55 25	2548	101 15 18	2558	99 35 25	2567
5	Sun W.	125 8 40	2960	126 39 43	2970	128 10 33	2780	129 41 11	2989
	Mars W.	101 46 51	2873	103 19 45	2883	104 52 25	2893	106 24 53	2902
	Jupiter W.	97 22 26	2692	98 59 16	2701	100 35 54	2711	102 12 19	2721
	Venus W.	78 50 53	2943	80 22 17	2952	81 53 30	2962	83 24 31	2972
	a Arietis W.	74 25 32	2653	76 3 15	2662	77 40 46	2670	79 18 6	2679
	Aldebaran W.	44 8 9	2752	45 43 40	2754	47 19 8	2756	48 54 33	2760
	Regulus E.	37 22 26	2629	35 44 11	2640	34 6 10	2650	32 28 23	2661
	Spica E.	91 19 17	2615	89 40 42	2624	88 2 20	2634	86 24 11	2643
6	Jupiter W.	110 11 20	2766	111 46 32	2775	113 21 32	2784	114 56 21	2792
	Venus W.	90 56 38	3018	92 26 29	3026	93 56 9	3034	95 25 39	3043
	a Arietis W.	87 21 50	2722	88 58 0	2731	90 33 59	2740	92 9 46	2748
	Aldebaran W.	56 50 24	2782	58 25 16	2788	60 0 0	2793	61 34 37	2798
	Saturn W.	26 58 9	2787	28 32 54	2785	30 7 42	2784	31 42 31	2785
	Regulus E.	24 23 13	2719	22 46 59	2733	21 11 3	2747	19 35 26	2762
	Spica E.	78 16 26	2687	76 39 28	2695	75 2 42	2704	73 26 7	2713
7	Venus W.	102 50 27	3087	104 18 53	3095	105 47 9	3104	107 15 14	3111
	a Arietis W.	100 5 51	2792	101 40 30	2799	103 14 59	2808	104 49 16	2817
	Aldebaran W.	69 25 44	2831	70 59 32	2837	72 33 12	2844	74 6 43	2851
	Saturn W.	39 35 42	2804	41 10 5	2810	42 44 20	2815	44 18 28	2821

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
7	Pollux	W.	19 3 30	2736	20 39 22	2742	22 15 6	2749	23 50 41	2756
	Spica	E.	71 49 44	2721	70 13 32	2729	68 37 31	2738	67 1 41	2747
	Antares	E.	117 43 26	2720	116 7 13	2729	114 31 12	2738	112 55 22	2746
8	*a* Arietis	W.	106 23 22	2826	107 57 16	2835	109 30 59	2842	111 4 31	2852
	Aldebaran	W.	75 40 5	2859	77 13 17	2866	78 46 20	2873	80 19 14	2880
	Saturn	W.	45 52 29	2826	47 26 23	2833	49 0 8	2840	50 33 44	2845
	Pollux	W.	31 46 17	2792	33 20 55	2800	34 55 23	2806	36 29 41	2815
	Spica	E.	59 5 16	2787	57 30 31	2796	55 55 56	2803	54 21 32	2811
	Antares	E.	104 58 56	2786	103 24 10	2795	101 49 35	2802	100 15 10	2809
9	*a* Arietis	W.	118 49 19	2897	120 21 42	2906	121 53 53	2914	123 25 53	2924
	Aldebaran	W.	88 1 24	2917	89 33 21	2925	91 5 8	2932	92 36 46	2940
	Saturn	W.	58 19 44	2879	59 52 30	2885	61 25 8	2893	62 57 36	2899
	Pollux	W.	44 18 46	2853	45 52 5	2860	47 25 15	2868	48 58 16	2875
	Spica	E.	46 32 6	2849	44 58 42	2857	43 25 28	2865	41 52 24	2873
	Antares	E.	92 25 34	2848	90 52 9	2856	89 18 54	2864	87 45 49	2872
10	Aldebaran	W.	100 12 27	2980	101 43 5	2988	103 13 33	2995	104 43 52	3004
	Saturn	W.	70 37 48	2934	72 9 24	2941	73 40 51	2948	75 12 9	2954
	Pollux	W.	56 40 58	2911	58 13 3	2919	59 44 58	2926	61 16 44	2932
	Regulus	W.	20 4 17	2949	21 35 34	2952	23 6 47	2955	24 37 56	2959
	Spica	E.	34 9 31	2910	32 37 25	2917	31 5 28	2924	29 33 40	2931
	Antares	E.	80 2 52	2909	78 30 45	2917	76 58 48	2924	75 27 0	2931
11	Aldebaran	W.	112 12 52	3045	113 42 9	3053	115 11 16	3061	116 40 13	3070
	Saturn	W.	82 46 34	2989	84 17 1	2993	85 47. 22	3000	87 17 35	3007
	Pollux	W.	68 53 25	2966	70 24 20	2973	71 55 7	2979	73 25 46	2985
	Regulus	W.	32 12 22	2982	33 42 57	2987	35 13 26	2993	36 43 48	2997
	Antares	E.	67 50 11	2965	66 19 14	2971	64 48 25	2977	63 17 44	2984
12	Saturn	W.	94 46 41	3037	96 16 8	3042	97 45 29	3048	99 14 42	3052
	Pollux	W.	80 57 8	3014	82 27 3	3020	83 56 51	3025	85 26 33	3030
	Regulus	W.	44 14 4	3023	45 43 48	3028	47 13 26	3033	48 42 58	3037
	Antares	E.	55 46 12	3013	54 16 15	3018	52 46 24	3023	51 16 40	3028
13	Saturn	W.	106 39 19	3077	108 7 57	3081	109 36 30	3084	111 4 59	3088
	Pollux	W.	92 53 37	3052	94 22 46	3056	95 51 50	3059	97 20 50	3061
	Regulus	W.	56 9 20	3057	57 38 22	3060	59 7 20	3065	60 36 13	3067
	Antares	E.	43 49 27	3050	42 20 16	3053	40 51 9	3056	39 22 6	3060
	a Aquilæ	E.	95 50 7	3879	94 36 26	3879	93 22 45	3880	92 9 5	3882
14	Pollux	W.	104 45 0	3073	106 13 42	3075	107 42 22	3077	109 11 0	3078
	Regulus	W.	67 59 54	3078	69 28 31	3079	70 57 6	3080	72 25 40	3081
	Antares	E.	31 57 45	3073	30 29 2	3074	29 0 21	3074	27 31 40	3075
	a Aquilæ	E.	86 1 22	3899	84 48 1	3904	83 34 45	3911	82 21 36	3917
15	Regulus	W.	79 48 26	3078	81 17 2	3078	82 45 39	3076	84 14 18	3073
	Spica	W.	25 45 51	3074	27 14 32	3073	28 43 14	3071	30 11 59	3069
	a Aquilæ	E.	76 17 43	3960	75 5 24	3971	73 53 16	3983	72 41 20	3996
	Sun	E.	127 11 16	3454	125 50 1	3454	124 28 45	3451	123 7 26	3449
16	Regulus	W.	91 38 27	3056	93 7 30	3052	94 36 39	3046	96 5 55	3040
	Spica	W.	37 36 36	3052	39 5 45	3047	40 35 0	3042	42 4 21	3036
	a Aquilæ	E.	66 45 8	4076	65 34 43	4096	64 24 37	4116	63 14 51	4140

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
7	Pollux	W.	25 26 7	2763	27 1 24	2770	28 36 31	2777	30 11 29	2785
	Spica	E.	65 26 3	2754	63 50 35	2763	62 15 18	2771	60 40 12	2779
	Antares	E.	111 19 43	2754	109 44 15	2763	108 8 58	2771	106 33 52	2779
8	α Arietis	W.	112 37 51	2861	114 11 0	2869	115 43 58	2879	117 16 44	2887
	Aldebaran	W.	81 51 59	2887	83 24 35	2894	84 57 1	2902	86 29 17	2909
	Saturn	W.	52 7 13	2852	53 40 34	2859	55 13 46	2866	56 46 49	2872
	Pollux	W.	38 3 50	2922	39 37 49	2930	41 11 38	2938	42 45 17	2945
	Spica	E.	52 47 18	2819	51 13 15	2827	49 39 22	2835	48 5 39	2842
	Antares	E.	98 40 54	2818	97 6 49	2825	95 32 54	2833	93 59 9	2841
9	α Arietis	W.	124 57 41	2934	126 29 17	2943	128 0 41	2954	129 31 52	2965
	Aldebaran	W.	94 8 14	2948	95 39 32	2956	97 10 40	2964	98 41 38	2971
	Saturn	W.	64 29 56	2905	66 2 8	2912	67 34 11	2920	69 6 4	2927
	Pollux	W.	50 31 7	2882	52 3 49	2890	53 36 21	2897	55 8 44	2904
	Spica	E.	40 19 30	2880	38 46 46	2888	37 14 12	2895	35 41 47	2903
	Antares	E.	86 12 54	2880	84 40 9	2887	83 7 34	2894	81 35 8	2902
10	Aldebaran	W.	106 14 0	3012	107 43 58	3020	109 13 46	3028	110 43 24	3036
	Saturn	W.	76 43 19	2960	78 14 22	2968	79 45 15	2975	81 15 59	2982
	Pollux	W.	62 48 22	2939	64 19 51	2946	65 51 11	2954	67 22 22	2960
	Regulus	W.	26 9 0	2963	27 39 59	2967	29 10 53	2972	30 41 41	2977
	Spica	E.	28 2 1	2939	26 30 31	2946	24 59 11	2954	23 28 0	2960
	Antares	E.	73 55 21	2939	72 23 51	2945	70 52 29	2952	69 21 16	2958
11	Aldebaran	W.	118 8 59	3078	119 37 35	3087	121 6 0	3096	122 34 14	3105
	Saturn	W.	88 47 39	3014	90 17 35	3019	91 47 24	3025	93 17 6	3030
	Pollux	W.	74 56 17	2991	76 26 41	2997	77 56 57	3003	79 27 6	3009
	Regulus	W.	38 14 4	3003	39 44 13	3008	41 14 16	3013	42 44 13	3018
	Antares	E.	61 47 11	2989	60 16 45	2996	58 46 27	3001	57 16 16	3007
12	Saturn	W.	100 43 50	3057	102 12 52	3063	103 41 47	3068	105 10 36	3073
	Pollux	W.	86 56 9	3034	88 25 39	3039	89 55 4	3043	91 24 23	3047
	Regulus	W.	50 12 25	3042	51 41 46	3046	53 11 2	3050	54 40 13	3053
	Antares	E.	49 47 2	3033	48 17 30	3038	46 48 4	3042	45 18 43	3046
13	Saturn	W.	112 33 23	3091	114 1 43	3096	115 29 58	3099	116 58 9	3101
	Pollux	W.	98 49 47	3065	100 18 40	3068	101 47 29	3069	103 16 16	3072
	Regulus	W.	62 5 3	3069	63 33 50	3072	65 2 34	3074	66 31 15	3076
	Antares	E.	37 53 7	3063	36 24 12	3065	34 55 20	3068	33 26 31	3070
	α Aquilæ	E.	90 55 27	3884	89 41 51	3886	88 28 17	3890	87 14 47	3895
14	Pollux	W.	110 38 36	3080	112 7 10	3080	113 35 44	3081	115 4 17	3081
	Regulus	W.	73 54 13	3081	75 22 46	3081	76 51 19	3081	78 19 52	3084
	Antares	E.	26 3 0	3075	24 34 20	3075	23 5 40	3076	21 37 1	3075
	α Aquilæ	E.	81 8 33	3923	79 55 37	3932	78 42 50	3941	77 30 12	3950
15	Regulus	W.	85 43 0	3070	87 11 46	3068	88 40 35	3064	90 9 29	3060
	Spica	W.	31 40 47	3066	33 9 38	3063	34 38 33	3060	36 7 32	3056
	α Aquilæ	E.	71 29 36	4010	70 18 6	4025	69 6 51	4040	67 55 51	4058
	Sun	E.	121 46 5	3446	120 24 40	3442	119 3 11	3438	117 41 38	3435
16	Regulus	W.	97 35 18	3034	99 4 48	3029	100 34 25	3022	102 4 11	3014
	Spica	W.	43 33 49	3030	45 3 24	3023	46 33 8	3017	48 3 0	3009
	α Aquilæ	E.	62 5 28	4166	60 56 30	4195	59 47 59	4224	58 39 56	4255

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Fomalhaut	E.	90 41 23	3270	89 16 36	3265	87 51 44	3262	86 26 48	3257
	Sun	E.	116 20 1	3430	114 58 18	3424	113 36 29	3418	112 14 33	3413
17	Regulus	W.	103 34 6	3007	105 4 10	2998	106 34 25	2990	108 4 50	2981
	Spica	W.	49 33 1	3001	51 3 12	2993	52 33 33	2985	54 4 5	2975
	α Aquilæ	E.	57 32 22	4291	56 25 21	4329	55 18 55	4370	54 13 7	4417
	Fomalhaut	E.	79 20 35	3230	77 55 1	3225	76 29 21	3219	75 3 34	3213
	Sun	E.	105 23 0	3375	104 0 15	3366	102 37 20	3356	101 14 13	3346
18	Spica	W.	61 39 49	2924	63 11 38	2912	64 42 42	2899	66 16 2	2887
	Antares	W.	15 45 57	2924	17 17 46	2911	18 49 51	2899	20 22 11	2887
	Fomalhaut	E.	67 52 56	3184	66 26 28	3178	64 59 53	3173	63 33 11	3168
	Sun	E.	94 15 36	3289	92 51 12	3276	91 26 33	3263	90 1 38	3250
19	Spica	W.	74 1 53	2818	75 35 57	2803	77 10 21	2788	78 45 5	2772
	Antares	W.	28 8 4	2818	29 42 9	2803	31 16 33	2788	32 51 17	2772
	Fomalhaut	E.	56 18 20	3149	54 51 10	3147	53 23 57	3146	51 56 43	3146
	Sun	E.	82 2 53	3174	81 26 13	3158	79 59 14	3142	78 31 55	3125
20	Spica	W.	86 44 0	2689	88 20 54	2672	89 58 11	2655	91 35 52	2637
	Antares	W.	40 50 14	2689	42 27 8	2672	44 4 25	2655	45 42 6	2637
	Sun	E.	71 10 3	3034	69 40 33	3016	68 10 40	2997	66 40 24	2978
21	Spica	W.	99 50 23	2545	101 30 33	2527	103 11 9	2508	104 52 11	2489
	Antares	W.	53 56 37	2546	55 36 47	2526	57 17 24	2508	58 58 26	2489
	Sun	E.	59 2 54	2880	57 30 9	2859	55 56 58	2838	54 23 20	2818
22	Antares	W.	67 30 13	2396	69 13 53	2378	70 58 0	2359	72 42 34	2342
	Sun	E.	46 28 35	2718	44 52 19	2698	43 15 36	2678	41 38 26	2658
27	Sun	W.	22 3 28	2310	23 49 13	2314	25 34 52	2319	27 20 24	2326
	Pollux	E.	82 19 0	2018	80 25 54	2022	78 32 54	2027	76 40 2	2032
	Regulus	E.	119 3 43	2023	117 10 45	2027	115 17 53	2032	113 25 9	2037
28	Sun	W.	36 5 37	2364	37 50 4	2373	39 34 17	2384	41 18 14	2394
	Pollux	E.	67 18 10	2070	65 26 24	2078	63 34 51	2088	61 43 33	2099
	Regulus	E.	104 3 48	2073	102 12 7	2082	100 20 40	2092	98 29 28	2101
29	Sun	W.	49 54 0	2456	51 36 15	2470	53 18 11	2484	54 59 47	2498
	α Arietis	W.	23 24 1	2375	25 8 11	2359	26 52 45	2349	28 37 33	2344
	Pollux	E.	52 31 15	2157	50 41 42	2169	48 52 28	2182	47 3 34	2196
	Regulus	E.	89 17 32	2159	87 28 2	2172	85 38 52	2184	83 50 1	2198
30	Sun	W.	63 22 40	2574	65 2 11	2590	66 41 20	2606	68 20 7	2622
	α Arietis	W.	37 22 1	2358	39 6 36	2366	40 51 0	2375	42 35 11	2384
	Venus	W.	21 33 21	2460	23 15 31	2474	24 57 21	2480	26 38 51	2502
	Pollux	E.	38 4 16	2268	36 17 30	2283	34 31 6	2298	32 45 4	2314
	Regulus	E.	74 50 57	2269	73 4 12	2284	71 17 49	2299	69 31 48	2315
31	Sun	W.	76 28 32	2704	78 5 7	2720	79 41 20	2737	81 17 11	2754
	α Arietis	W.	51 12 19	2443	52 54 53	2455	54 37 9	2468	56 19 7	2482
	Venus	W.	35 1 22	2574	36 40 52	2591	38 20 0	2605	39 58 48	2619
	Regulus	E.	60 47 20	2392	59 3 34	2408	57 20 10	2423	55 37 8	2439
	Spica	E.	114 47 15	2384	113 3 18	2401	111 19 44	2416	109 36 32	2431

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Fomalhaut E.	85 1 46	3252	83 36 38	3246	82 11 23	3241	80 46 2	3236
	Sun E.	110 52 31	3406	109 30 21	3399	108 8 3	3391	106 45 36	3384
17	Regulus W.	109 35 27	2971	111 6 12	2962	112 37 17	2952	114 8 30	2941
	Spica W.	55 34 49	2965	57 5 45	2956	58 36 53	2946	60 8 14	2935
	a Aquilæ E.	53 8 1	4467	52 3 40	4520	51 0 6	4581	49 57 25	4650
	Fomalhaut E.	73 37 40	3207	72 11 39	3201	70 45 31	3196	69 19 17	3190
	Sun E.	99 50 55	3336	98 27 25	3325	97 3 42	3313	95 39 46	3301
18	Spica W.	67 48 38	2874	69 21 30	2861	70 54 39	2846	72 28 7	2832
	Antares W.	21 54 47	2873	23 27 40	2860	25 0 50	2846	26 34 18	2832
	Fomalhaut E.	62 6 24	3163	60 39 30	3158	59 12 31	3154	57 45 27	3152
	Sun E.	88 36 28	3236	87 11 1	3221	85 45 17	3206	84 19 14	3190
19	Spica W.	80 20 9	2756	81 55 34	2740	83 31 21	2724	85 7 29	2707
	Antares W.	34 26 21	2756	36 1 47	2740	37 37 34	2723	39 13 43	2707
	Fomalhaut E.	50 29 29	3148	49 2 17	3152	47 35 10	3157	46 8 9	3163
	Sun E.	77 4 16	3108	75 36 16	3090	74 7 54	3072	72 39 10	3053
20	Spica W.	93 13 57	2619	94 52 26	2601	96 31 20	2583	98 10 39	2564
	Antares W.	47 20 11	2619	48 58 40	2601	50 37 34	2583	52 16 53	2564
	Sun E.	65 9 44	2958	63 38 39	2939	62 7 9	2919	60 35 14	2899
21	Spica W	106 33 39	2471	108 15 33	2452	109 57 54	2433	111 40 41	2415
	Antares W.	60 39 55	2470	62 21 50	2452	64 4 11	2433	65 46 59	2415
	Sun E.	52 49 16	2798	51 14 46	2778	49 39 49	2757	48 4 25	2738
22	Antares W.	74 27 33	2323	76 12 59	2305	77 58 51	2288	79 45 8	2271
	Sun E.	40 0 50	2639	38 22 48	2621	36 44 21	2601	35 5 28	2583
27	Sun W.	29 5 47	2331	30 51 1	2338	32 36 5	2346	34 20 57	2355
	Pollux E.	74 47 18	2039	72 54 44	2046	71 2 21	2053	69 10 9	2061
	Regulus E.	111 32 33	2043	109 40 6	2049	107 47 48	2057	105 55 42	2064
28	Sun W.	43 1 57	2405	44 45 24	2417	46 28 34	2430	48 11 26	2443
	Pollux E.	59 52 32	2109	58 1 47	2120	56 11 19	2132	54 21 8	2143
	Regulus E.	96 38 31	2112	94 47 50	2123	92 57 26	2135	91 7 20	2147
29	Sun W.	56 41 3	2512	58 21 59	2527	60 2 34	2543	61 42 48	2559
	a Arietis W.	30 22 28	2342	32 7 27	2343	33 52 24	2346	35 37 16	2351
	Pollux E.	45 15 0	2210	43 26 47	2224	41 38 55	2239	39 51 25	2253
	Regulus E.	82 1 31	2212	80 13 21	2226	78 25 32	2240	76 38 4	2254
30	Sun W.	69 58 32	2638	71 36 35	2655	73 14 16	2671	74 51 35	2687
	a Arietis W.	44 19 9	2396	46 2 51	2406	47 46 17	2417	49 29 27	2430
	Venus W.	28 20 1	2517	30 0 51	2530	31 41 22	2545	33 21 32	2560
	Pollux E.	30 59 25	2330	29 14 9	2346	27 29 16	2362	25 44 47	2380
	Regulus E.	67 46 10	2330	66 0 54	2345	64 16 0	2361	62 31 29	2376
31	Sun W.	82 52 39	2770	84 27 46	2786	86 2 32	2802	87 36 57	2819
	a Arietis W.	58 0 46	2498	59 42 6	2508	61 23 8	2522	63 3 51	2535
	Venus W.	41 37 17	2635	43 15 25	2648	44 53 13	2665	46 30 40	2678
	Regulus E.	53 54 29	2455	52 12 12	2470	50 30 16	2486	48 48 42	2501
	Spica E.	107 53 41	2446	106 11 12	2462	104 29 5	2477	102 47 19	2492

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to* / *subtracted from* *Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Wed.	1	0 43 5.14	9.098	N. 4 38 13.8	57.80	16 1.93	64.51	3 54.67	0.758
Thur.	2	0 46 43.52	9.102	5 1 18.3	57.58	16 1.66	64.53	3 36.54	0.754
Fri.	3	0 50 22.01	9.106	5 24 17.3	57.35	16 1.39	64.55	3 18.53	0.749
Sat.	4	0 54 0.63	9.114	5 47 10.5	57.10	16 1.12	64.57	3 0.66	0.743
Sun.	5	0 57 39.41	9.121	6 9 57.6	56.84	16 0.85	64.59	2 42.94	0.736
Mon.	6	1 1 18.37	9.129	6 32 38.2	56.56	16 0.57	64.62	2 25.40	0.728
Tues.	7	1 4 57.53	9.137	6 55 12.0	56.27	16 0.30	64.65	2 8.05	0.719
Wed.	8	1 8 36.91	9.146	7 17 38.8	55.97	16 0.03	64.68	1 50.91	0.710
Thur.	9	1 12 16.52	9.156	7 39 58.2	55.65	15 59.76	64.72	1 34.02	0.700
Fri.	10	1 15 56.37	9.167	8 2 9.8	55.32	15 59.49	64.76	1 17.38	0.689
Sat.	11	1 19 36.52	9.180	8 24 13.3	54.98	15 59.21	64.80	1 0.99	0.677
Sun.	12	1 23 16.98	9.193	8 46 8.5	54.63	15 58.94	64.85	0 44.92	0.664
Mon.	13	1 26 57.74	9.206	9 7 55.2	54.27	15 58.67	64.90	0 29.18	0.650
Tues.	14	1 30 38.84	9.221	9 29 33.0	53.89	15 58.40	64.95	0 13.78	0.635
Wed.	15	1 34 20.30	9.236	9 51 1.4	53.49	15 58.13	65.00	0 1.27	0.620
Thur.	16	1 38 2.14	9.252	10 12 20.1	53.08	15 57.86	65.05	0 15.95	0.604
Fri.	17	1 41 44.36	9.269	10 33 29.0	52.66	15 57.59	65.10	0 30.24	0.588
Sat.	18	1 45 26.99	9.286	10 54 27.6	52.23	15 57.32	65.16	0 44.13	0.571
Sun.	19	1 49 10.03	9.303	11 15 15.6	51.78	15 57.05	65.22	0 57.60	0.553
Mon.	20	1 52 53.50	9.321	11 35 52.6	51.31	15 56.78	65.28	1 10.65	0.535
Tues.	21	1 56 37.41	9.340	11 56 18.2	50.83	15 56.52	65.34	1 23.26	0.516
Wed.	22	2 0 21.78	9.359	12 16 32.1	50.33	15 56.26	65.41	1 35.42	0.497
Thur.	23	2 4 6.61	9.378	12 36 33.9	49.82	15 56.00	65.48	1 47.11	0.478
Fri.	24	2 7 51.91	9.398	12 56 23.4	49.30	15 55.75	65.55	1 58.33	0.458
Sat.	25	2 11 37.68	9.418	13 16 0.2	48.76	15 55.50	65.62	2 9.08	0.438
Sun.	26	2 15 23.93	9.438	13 35 23.9	48.21	15 55.26	65.69	2 19.36	0.418
Mon.	27	2 19 10.67	9.458	13 54 34.1	47.64	15 55.02	65.76	2 29.15	0.398
Tues.	28	2 22 57.90	9.479	14 13 30.6	47.06	15 54.78	65.83	2 38.44	0.377
Wed.	29	2 26 45.65	9.501	14 32 12.9	46.46	15 54.54	65.91	2 47.22	0.355
Thur.	30	2 30 33.93	9.523	14 50 40.7	45.85	15 54.31	65.99	2 55.48	0.333
Fri.	31	2 34 22.74	9.544	N.15 8 53.8	45.23	15 54.08	66.07	3 3.21	0.312

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be subtracted from / added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Wed.	1	0 43 4.54	9.098	N. 4 38 10.0	57.80	3 54.72	0.758	0 39 9.82
Thur.	2	0 46 42.96	9.102	5 1 14.8	57.58	3 36.59	0.754	0 43 6.37
Fri.	3	0 50 21.50	9.108	5 24 14.1	57.35	3 18.57	0.749	0 47 2.93
Sat.	4	0 53 0.17	9.114	5 47 7.6	57.10	3 0.69	0.743	0 50 59.48
Sun.	5	0 57 39.00	9.121	6 9 55.0	56.84	2 42.97	0.736	0 54 56.03
Mon.	6	1 1 18.01	9.129	6 32 35.9	56.56	2 25.43	0.728	0 58 52.58
Tues.	7	1 4 57.21	9.137	6 55 10.0	56.27	2 8.07	0.719	1 2 49.14
Wed.	8	1 8 36.63	9.146	7 17 37.1	55.97	1 50.94	0.710	1 6 45.69
Thur.	9	1 12 16.28	9.156	7 39 56.8	55.65	1 34.03	0.700	1 10 42.25
Fri.	10	1 15 56.17	9.167	8 2 8.6	55.32	1 17.37	0.689	1 14 38.80
Sat.	11	1 19 36.36	9.180	8 24 12.4	54.98	1 1.00	0.677	1 18 35.36
Sun.	12	1 23 16.85	9.193	8 46 7.9	54.63	0 44.93	0.664	1 22 31.92
Mon.	13	1 26 57.66	9.206	9 7 54.8	54.27	0 29.19	0.650	1 26 28.47
Tues.	14	1 30 38.80	9.221	9 29 32.8	53.89	0 13.78	0.635	1 30 25.02
Wed.	15	1 34 20.30	9.236	9 51 1.4	53.49	0 1.27	0.620	1 34 21.57
Thur.	16	1 38 2.18	9.252	10 12 20.3	53.08	0 15.95	0.604	1 38 18.13
Fri.	17	1 41 44.44	9.269	10 33 29.4	52.66	0 30.24	0.588	1 42 14.68
Sat.	18	1 45 27.11	9.286	10 54 28.2	52.23	0 44.13	0.571	1 46 11.24
Sun.	19	1 49 10.19	9.303	11 15 16.4	51.78	0 57.60	0.553	1 50 7.79
Mon.	20	1 52 53.69	9.321	11 35 53.6	51.31	1 10.66	0.535	1 54 4.35
Tues.	21	1 56 37.63	9.340	11 56 19.4	50.83	1 23.27	0.516	1 58 0.90
Wed.	22	2 0 22.03	9.359	12 16 33.5	50.33	1 35.43	0.497	2 1 57.46
Thur.	23	2 4 6.89	9.378	12 36 35.5	49.82	1 47.12	0.478	2 5 54.01
Fri.	24	2 7 52.22	9.398	12 56 25.1	49.30	1 58.35	0.458	2 9 50.57
Sat.	25	2 11 38.02	9.418	13 16 2.0	48.76	2 9.11	0.438	2 13 47.13
Sun.	26	2 15 24.30	9.438	13 35 25.8	48.21	2 19.38	0.418	2 17 43.68
Mon.	27	2 19 11.07	9.458	13 54 36.1	47.64	2 29.17	0.398	2 21 40.24
Tues.	28	2 22 58.33	9.479	14 13 32.7	47.06	2 38.46	0.377	2 25 36.79
Wed.	29	2 26 46.11	9.501	14 32 15.1	46.46	2 47.24	0.355	2 29 33.35
Thur.	30	2 30 34.41	9.523	14 50 43.0	45.85	2 55.49	0.333	2 33 29.90
Fri.	31	2 34 23.23	9.544	N.15 8 56.2	45.28	3 3.23	0.312	2 37 26.46

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	91	11 43 9.5	42 59.0	147.81	+0.39	0.0000308	51.0	23 17 0.70
2	92	12 42 15.7	42 5.1	147.72	0.38	.0001532	51.0	23 13 4.79
3	93	13 41 19.7	41 9.0	147.62	0.34	.0002755	51.0	23 9 8.88
4	94	14 40 21.4	40 10.6	147.52	0.26	.0003979	51.1	23 5 12.97
5	95	15 39 20.7	39 9.8	147.43	0.17	.0005206	51.1	23 1 17.07
6	96	16 38 17.9	38 6.9	147.34	+0.05	.0006434	51.2	22 57 21.16
7	97	17 37 12.9	37 1.7	147.25	—0.07	.0007663	51.2	22 53 25.25
8	98	18 36 5.7	35 54.4	147.16	0.22	.0008893	51.3	22 49 29.34
9	99	19 34 56.4	34 45.0	147.07	0.35	.0010128	51.5	22 45 33.43
10	100	20 33 45.0	33 33.5	146.98	0.48	.0011365	51.5	22 41 37.53
11	101	21 32 31.7	32 20.1	146.90	0.59	.0012604	51.6	22 37 41.62
12	102	22 31 16.6	31 4.9	146.83	0.69	.0013843	51.6	22 33 45.71
13	103	23 29 59.7	29 47.9	146.76	0.75	.0015082	51.6	22 29 49.80
14	104	24 28 41.1	28 29.1	146.69	0.79	.0016321	51.5	22 25 53.89
15	105	25 27 20.8	27 8.7	146.62	0.82	.0017558	51.4	22 21 57.98
16	106	26 25 58.8	25 46.6	146.55	0.80	.0018790	51.2	22 18 2.07
17	107	27 24 35.2	24 22.9	146.48	0.75	.0020015	51.0	22 14 6.16
18	108	28 23 9.9	22 57.4	146.41	0.68	.0021234	50.6	22 10 10.25
19	109	29 21 42.8	21 30.2	146.34	0.58	.0022443	50.1	22 6 14.34
20	110	30 20 14.1	20 1.4	146.27	0.46	.0023641	49.7	22 2 18.43
21	111	31 18 43.8	18 31.0	146.20	0.33	.0024828	49.2	21 58 22.52
22	112	32 17 11.8	16 58.8	146.13	0.20	.0026001	48.5	21 54 26.61
23	113	33 15 38.0	15 24.8	146.06	—0.07	.0027160	48.0	21 50 30.70
24	114	34 14 2.4	13 49.1	145.98	+0.04	.0028306	47.4	21 46 34.79
25	115	35 12 24.9	12 11.5	145.90	0.16	.0029437	46.9	21 42 38.88
26	116	36 10 45.5	10 32.0	145.82	0.23	.0030554	46.2	21 38 42.97
27	117	37 9 4.2	8 50.5	145.73	0.27	.0031655	45.6	21 34 47.06
28	118	38 7 20.8	7 7.0	145.65	0.29	.0032742	45.0	21 30 51.16
29	119	39 5 35.3	5 21.4	145.56	0.30	.0033814	44.5	21 26 55.25
30	120	40 3 47.9	3 33.9	145.48	0.27	.0034874	43.9	21 22 59.34
31	121	41 1 58.6	1 44.4	145.40	+0.20	0.0035922	43.3	21 19 3.43

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	15 48.6	15 42.2	57 54.7	−1.98	57 31.3	−1.92	6 25.3	2.43	6.6
2	15 36.1	15 30.2	57 8.7	1.84	56 47.1	1.75	7 21.7	2.25	7.6
3	15 24.6	15 19.4	56 26.8	1.64	56 7.7	1.58	8 13.3	2.06	8.6
4	15 14.6	15 10.2	55 50.0	1.42	55 33.7	1.30	9 0.5	1.89	9.6
5	15 6.1	15 2.4	55 18.8	1.19	55 5.2	1.08	9 44.1	1.76	10.6
6	14 59.1	14 56.1	54 53.0	0.97	54 42.1	0.86	10 25.1	1.68	11.6
7	14 53.5	14 51.2	54 32.5	0.75	54 24.0	0.65	11 4.7	1.65	12.6
8	14 49.2	14 47.6	54 16.8	0.55	54 10.8	0.45	11 44.1	1.65	13.6
9	14 46.3	14 45.3	54 5.9	0.35	54 2.3	0.25	12 24.1	1.70	14.6
10	14 44.7	14 44.4	54 0.0	−0.14	53 59.0	−0.02	13 5.8	1.79	15.6
11	14 44.5	14 45.0	53 59.4	+0.10	54 1.4	+0.23	13 50.0	1.90	16.6
12	14 46.1	14 47.5	54 5.0	0.37	54 10.3	0.52	14 37.1	2.02	17.6
13	14 49.4	14 51.8	54 17.4	0.67	54 26.4	0.83	15 27.1	2.13	18.6
14	14 54.8	14 58.4	54 37.4	1.00	54 50.4	1.17	16 19.6	2.21	19.6
15	15 2.5	15 7.2	55 5.6	1.35	55 22.8	1.53	17 13.4	2.24	20.6
16	15 12.5	15 18.4	55 42.2	1.70	56 3.6	1.86	18 7.3	2.22	21.6
17	15 24.8	15 31.6	56 26.9	2.01	56 51.9	2.15	19 0.0	2.17	22.6
18	15 38.8	15 46.3	57 18.4	2.26	57 46.2	2.34	19 51.2	2.10	23.6
19	15 54.0	16 1.8	58 14.7	2.38	58 43.4	2.38	20 41.0	2.06	24.6
20	16 9.5	16 16.9	59 11.7	2.32	59 39.0	2.20	21 30.0	2.05	25.6
21	16 23.9	16 30.2	60 4.5	2.02	60 27.6	1.78	22 19.6	2.10	26.6
22	16 35.6	16 39.9	60 47.4	1.49	61 3.3	1.15	23 11.0	2.20	27.6
23	16 43.0	16 44.9	61 14.9	+0.77	61 21.7	+0.36	δ		28.6
24	16 45.4	16 44.5	61 23.5	−0.06	61 20.2	−0.48	0 5.5	2.35	0.2
25	16 42.3	16 38.8	61 11.9	0.88	60 59.1	1.24	1 4.1	2.52	1.2
26	16 34.2	16 28.6	60 42.2	1.56	60 21.7	1.83	2 6.4	2.64	2.2
27	16 22.2	16 15.3	59 58.3	2.04	59 32.7	2.19	3 10.8	2.67	3.2
28	16 7.9	16 0.3	59 5.7	2.29	58 37.8	2.33	4 14.4	2.57	4.2
29	15 52.7	15 45.1	58 9.8	2.32	57 42.1	2.27	5 14.2	2.38	5.2
30	15 37.8	15 30.8	57 15.2	2.19	56 49.6	2.08	6 8.8	2.17	6.2
31	15 24.2	15 18.1	56 25.4	−1.95	56 2.8	−1.80	6 57.8	2.00	7.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	WEDNESDAY 1.					FRIDAY 3.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	s
0	6 49 21.02	2.5436	N.28 16 9.6	3.137	0	8 43 48.83	2.2103	N.22 50 43.7	9.872
1	6 51 53.47	2.5381	28 12 56.2	3.309	1	8 46 1.23	2.2030	22 40 48.2	9.977
2	6 54 25.59	2.5325	28 9 32.5	3.480	2	8 48 13.19	2.1957	22 30 46.5	10.079
3	6 56 57.37	2.5268	28 5 58.6	3.650	3	8 50 24.71	2.1884	22 20 38.7	10.181
4	6 59 28.81	2.5211	28 2 14.5	3.820	4	8 52 35.80	2.1812	22 10 24.8	10.282
5	7 1 59.90	2.5152	27 58 20.2	3.989	5	8 54 46.45	2.1740	22 0 4.9	10.381
6	7 4 30.64	2.5092	27 54 15.8	4.156	6	8 56 56.67	2.1668	21 49 39.1	10.478
7	7 7 1.02	2.5031	27 50 1.5	4.320	7	8 59 6.46	2.1596	21 39 7.5	10.575
8	7 9 31.03	2.4970	27 45 37.4	4.483	8	9 1 15.82	2.1524	21 28 30.1	10.670
9	7 12 0.67	2.4908	27 41 3.5	4.646	9	9 3 24.75	2.1453	21 17 47.1	10.763
10	7 14 29.93	2.4845	27 36 19.9	4.807	10	9 5 33.26	2.1383	21 6 58.6	10.854
11	7 16 58.81	2.4781	27 31 26.7	4.967	11	9 7 41.35	2.1313	20 56 4.6	10.945
12	7 19 27.30	2.4716	27 26 23.9	5.126	12	9 9 49.02	2.1243	20 45 5.1	11.035
13	7 21 55.40	2.4650	27 21 11.6	5.283	13	9 11 56.27	2.1173	20 34 0.3	11.123
14	7 24 23.10	2.4583	27 15 49.9	5.439	14	9 14 3.10	2.1104	20 22 50.3	11.209
15	7 26 50.39	2.4515	27 10 18.9	5.593	15	9 16 9.52	2.1036	20 11 35.2	11.294
16	7 29 17.28	2.4447	27 4 38.7	5.746	16	9 18 15.53	2.0968	20 0 15.0	11.378
17	7 31 43.76	2.4378	26 58 49.4	5.897	17	9 20 21.14	2.0901	19 48 49.8	11.461
18	7 34 9.82	2.4309	26 52 51.0	6.047	18	9 22 26.35	2.0834	19 37 19.7	11.542
19	7 36 35.47	2.4239	26 46 43.7	6.196	19	9 24 31.16	2.0768	19 25 44.8	11.622
20	7 39 0.70	2.4169	26 40 27.5	6.344	20	9 26 35.57	2.0702	19 14 5.1	11.701
21	7 41 25.50	2.4098	26 34 2.4	6.490	21	9 28 39.59	2.0637	19 2 20.7	11.778
22	7 43 49.88	2.4027	26 27 28.6	6.634	22	9 30 43.22	2.0572	18 50 31.7	11.854
23	7 46 13.83	2.3956	N.26 20 46.3	6.777	23	9 32 46.46	2.0508	N.18 38 38.2	11.929
	THURSDAY 2.					SATURDAY 4.			
0	7 48 37.35	2.3884	N.26 13 55.4	6.918	0	9 34 49.32	2.0445	N.18 26 40.2	12.002
1	7 51 0.44	2.3812	26 6 56.1	7.058	1	9 36 51.80	2.0382	18 14 37.9	12.074
2	7 53 23.09	2.3739	25 59 48.4	7.197	2	9 38 53.90	2.0320	18 2 31 3	12.145
3	7 55 45.31	2.3666	25 52 32.4	7.335	3	9 40 55.63	2.0258	17 50 20.5	12.215
4	7 58 7.09	2.3592	25 45 8.2	7.470	4	9 42 56.99	2.0197	17 38 5.5	12.283
5	8 0 28.42	2.3518	25 37 36.0	7.604	5	9 44 57.99	2.0137	17 25 46.5	12.350
6	8 2 49.31	2.3444	25 29 55.7	7.737	6	9 46 58.63	2.0077	17 13 23.4	12.417
7	8 5 9.76	2.3370	25 22 7.5	7.868	7	9 48 58.91	2.0018	17 0 56.4	12.482
8	8 7 29.76	2.3296	25 14 11.5	7.997	8	9 50 58.84	1.9958	16 48 25.6	12.546
9	8 9 49.31	2.3222	25 6 7.8	8.126	9	9 52 58.42	1.9900	16 35 50.9	12.609
10	8 12 8.42	2.3147	24 57 56.4	8.253	10	9 54 57.65	1.9842	16 23 12.5	12.670
11	8 14 27.08	2.3072	24 49 37.4	8.378	11	9 56 56.53	1.9785	16 10 30.5	12.730
12	8 16 45.29	2.2997	24 41 11.0	8.502	12	9 58 55.07	1.9729	15 57 44.9	12.789
13	8 19 3.05	2.2922	24 32 37.2	8.624	13	10 0 53.28	1.9674	15 44 55.8	12.847
14	8 21 20.36	2.2847	24 23 56.1	8.745	14	10 2 51.16	1.9620	15 32 3.3	12.903
15	8 23 37.22	2.2772	24 15 7.8	8.864	15	10 4 48.72	1.9566	15 19 7.4	12.959
16	8 25 53.63	2.2698	24 6 12.4	8.982	16	10 6 45.96	1.9513	15 6 8.2	13.013
17	8 28 9.60	2.2624	23 57 10.0	9.098	17	10 8 42.88	1.9460	14 53 5.8	13.067
18	8 30 25.12	2.2549	23 48 0.6	9.213	18	10 10 39.48	1.9408	14 40 0.2	13.119
19	8 32 40.19	2.2474	23 38 44.4	9.327	19	10 12 35.77	1.9357	14 26 51.5	13.170
20	8 34 54.81	2.2399	23 29 21.4	9.438	20	10 14 31.76	1.9307	14 13 39.8	13.220
21	8 37 8.98	2.2325	23 19 51.8	9.548	21	10 16 27.45	1.9257	14 0 25.1	13.269
22	8 39 22.71	2.2251	23 10 15.6	9.657	22	10 18 22.84	1.9208	13 47 7.5	13.317
23	8 41 35.99	2.2177	23 0 32.9	9.765	23	10 20 17.94	1.9159	13 33 47.1	13.363
24	8 43 48.83	2.2103	N.22 50 43.7	9.872	24	10 22 12.75	1.9111	N.13 20 23.9	13.409

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 5.					TUESDAY 7.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	10 22 12.75	1.9111	N.13 20 23.9	13.409	0	11 49 50.22	1.7679	N. 2 2 41.5	14.479
1	10 24 7.27	1.9063	13 6 58.0	13.453	1	11 51 36.26	1.7667	1 48 12.7	14.480
2	10 26 1.51	1.9017	12 53 29.5	13.497	2	11 53 22.23	1.7656	1 33 43.9	14.481
3	10 27 55.47	1.8971	12 39 58.4	13.539	3	11 55 8.14	1.7646	1 19 15.0	14.481
4	10 29 49.16	1.8927	12 26 24.8	13.581	4	11 56 53.98	1.7636	1 4 46.2	14.479
5	10 31 42.59	1.8883	12 12 48.7	13.622	5	11 58 39.77	1.7627	0 50 17.5	14.477
6	10 33 35.76	1.8840	11 59 10.2	13.661	6	12 0 25.50	1.7618	0 35 49.0	14.473
7	10 35 28.67	1.8798	11 45 29.4	13.699	7	12 2 11.18	1.7610	0 21 20.7	14.469
8	10 37 21.33	1.8756	11 31 46.3	13.737	8	12 3 56.82	1.7603	N. 0 6 52.7	14.464
9	10 39 13.74	1.8714	11 18 0.9	13.774	9	12 5 42.42	1.7597	S. 0 7 35.0	14.459
10	10 41 5.90	1.8673	11 4 13.4	13.809	10	12 7 27.98	1.7591	0 22 2.4	14.453
11	10 42 57.82	1.8634	10 50 23.8	13.843	11	12 9 13.51	1.7586	0 36 29.4	14.447
12	10 44 49.51	1.8596	10 36 32.2	13.877	12	12 10 59.01	1.7581	0 50 56.0	14.439
13	10 46 40.97	1.8558	10 22 38.6	13.910	13	12 12 44.48	1.7577	1 5 22.1	14.430
14	10 48 32.20	1.8520	10 8 43.0	13.942	14	12 14 29.94	1.7575	1 19 47.6	14.420
15	10 50 23.21	1.8483	9 54 45.6	13.972	15	12 16 15.38	1.7573	1 34 12.5	14.410
16	10 52 14.00	1.8447	9 40 46.4	14.002	16	12 18 0.81	1.7571	1 48 36.8	14.399
17	10 54 4.58	1.8412	9 26 45.4	14.030	17	12 19 46.23	1.7570	2 3 0.4	14.387
18	10 55 54.94	1.8377	9 12 42.7	14.058	18	12 21 31.65	1.7570	2 17 23.2	14.374
19	10 57 45.10	1.8343	8 58 38.4	14.085	19	12 23 16.07	1.7570	2 31 45.3	14.361
20	10 59 35.06	1.8310	8 44 32.5	14.111	20	12 25 2.49	1.7571	2 46 6.6	14.347
21	11 1 24.82	1.8278	8 30 25.0	14.136	21	12 26 47.92	1.7573	3 0 27.0	14.332
22	11 3 14.39	1.8246	8 16 16.1	14.160	22	12 28 33.36	1.7575	3 14 46.5	14.317
23	11 5 3.77	1.8215	N. 8 2 5.8	14.183	23	12 30 18.82	1.7578	S. 3 29 5.0	14.300
	MONDAY 6.					WEDNESDAY 8.			
0	11 6 52.97	1.8185	N. 7 47 54.1	14.206	0	12 32 4.30	1.7582	S. 3 43 22.5	14.282
1	11 8 41.99	1.8156	7 33 41.1	14.227	1	12 33 49.80	1.7586	3 57 38.9	14.264
2	11 10 30.84	1.8127	7 19 26.9	14.247	2	12 35 35.33	1.7591	4 11 54.2	14.246
3	11 12 19.51	1.8099	7 5 11.4	14.267	3	12 37 20.90	1.7596	4 26 8.4	14.227
4	11 14 8.02	1.8072	6 50 54.8	14.286	4	12 39 6.50	1.7602	4 40 21.5	14.207
5	11 15 56.37	1.8045	6 36 37.1	14.303	5	12 40 52.14	1.7610	4 54 33.3	14.186
6	11 17 44.56	1.8019	6 22 18.4	14.320	6	12 42 37.83	1.7618	5 8 43.8	14.164
7	11 19 32 60	1.7994	6 7 58.7	14.336	7	12 44 23.56	1.7627	5 22 53.0	14.141
8	11 21 20.49	1.7970	5 53 38.1	14.352	8	12 46 9.35	1.7636	5 37 0.8	14.117
9	11 23 8.24	1.7947	5 39 16.5	14.367	9	12 47 55.19	1.7646	5 51 7.1	14.092
10	11 24 55.85	1.7924	5 24 54.1	14.380	10	12 49 41.09	1.7656	6 5 11.9	14.067
11	11 26 43.33	1.7902	5 10 30.9	14.392	11	12 51 27.06	1.7667	6 19 15.2	14.042
12	11 28 30.67	1.7881	4 56 7.0	14.404	12	12 53 13.09	1.7678	6 33 16.9	14.015
13	11 30 17.89	1.7860	4 41 42.4	14.415	13	12 54 59.19	1.7690	6 47 17.0	13.988
14	11 32 4.99	1.7840	4 27 17.1	14.425	14	12 56 45.37	1.7703	7 1 15.5	13.961
15	11 33 51.97	1.7821	4 12 51.3	14.434	15	12 58 31.63	1.7717	7 15 12.3	13.932
16	11 35 38.84	1.7802	3 58 25.0	14.442	16	13 0 17.97	1.7731	7 29 7.3	13.901
17	11 37 25.60	1.7784	3.43 58.2	14.450	17	13 2 4.40	1.7746	7 43 0.4	13.869
18	11 39 12.25	1.7767	3 29 30.9	14.457	18	13 3 50.92	1.7761	7 56 51.6	13.838
19	11 40 58.80	1.7751	3 15 3.3	14.462	19	13 5 37.53	1.7777	8 10 41.0	13.807
20	11 42 45.26	1.7736	3 0 35.4	14.467	20	13 7 24.24	1.7793	8 24 28.5	13.775
21	11 44 31.63	1.7721	2 46 7.2	14.472	21	13 9 11.05	1.7811	8 38 14.0	13.741
22	11 46 17.91	1.7706	2 31 38.8	14.475	22	13 10 57.97	1.7829	8 51 57.4	13.706
23	11 48 4.11	1.7692	2 17 10.2	14.477	23	13 12 45.00	1.7847	9 5 38.7	13.670
24	11 49 50.22	1.7679	N. 2 2 41.5	14.479	24	13 14 32.13	1.7865	S. 9 19 17.8	13.634

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 9.					SATURDAY 11.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	13 14 32.13	1.7865	S. 9 19 17.8	13.634	0	14 43 33.08	1.9417	S.19 16 36.8	10.930
1	13 16 19.38	1.7885	9 32 54.7	13.597	1	14 45 29.71	1.9460	19 27 30.3	10.852
2	13 18 6.75	1.7906	9 46 29.4	13.560	2	14 47 26.60	1.9503	19 38 19.1	10.774
3	13 19 54.25	1.7927	10 0 1.9	13.522	3	14 49 23.75	1.9547	19 49 3.2	10.695
4	13 21 41.88	1.7948	10 13 32.0	13.482	4	14 51 21.17	1.9592	19 59 42.5	10.614
5	13 23 29.63	1.7970	10 26 59.7	13.442	5	14 53 18.85	1.9636	20 10 16.9	10.533
6	13 25 17.52	1.7993	10 40 25.0	13.401	6	14 55 16.80	1.9681	20 20 46.5	10.451
7	13 27 5.55	1.8017	10 53 47.8	13.359	7	14 57 15.02	1.9726	20 31 11.1	10.368
8	13 28 53.72	1.8040	11 7 8.1	13.317	8	14 59 13.51	1.9771	20 41 30.7	10.285
9	13 30 42.03	1.8064	11 20 25.8	13.274	9	15 1 12.28	1.9817	20 51 45.3	10.201
10	13 32 30.49	1.8089	11 33 40.9	13.229	10	15 3 11.32	1.9863	21 1 54.8	10.115
11	13 34 19.10	1.8115	11 46 53.3	13.184	11	15 5 10.64	1.9909	21 11 59.1	10.027
12	13 36 7.87	1.8141	12 0 3.0	13.138	12	15 7 10.23	1.9955	21 21 58.1	9.939
13	13 37 56.79	1.8167	12 13 9 9	13.092	13	15 9 10.10	2.0002	21 31 51.8	9.851
14	13 39 45.88	1.8195	12 26 14.0	13.045	14	15 11 10.25	2.0049	21 41 40.2	9.762
15	13 41 35.13	1.8223	12 39 15.3	12.997	15	15 13 10.69	2.0096	21 51 23.3	9.673
16	13 43 24.55	1.8251	12 52 13.6	12.947	16	15 15 11.41	2.0143	22 1 1.0	9.582
17	13 45 14.14	1.8280	13 5 8.9	12.897	17	15 17 12.41	2.0191	22 10 33.2	9.490
18	13 47 3.90	1.8310	13 18 1.2	12.847	18	15 19 13.70	2.0239	22 19 59.8	9.397
19	13 48 53.84	1.8340	13 30 50.5	12.796	19	15 21 15.28	2.0287	22 29 20.8	9.303
20	13 50 43.97	1.8370	13 43 36.7	12.743	20	15 23 17.14	2.0335	22 38 36.1	9.208
21	13 52 34.28	1.8401	13 56 19.7	12.690	21	15 25 19.29	2.0383	22 47 45.8	9.113
22	13 54 24.78	1.8432	14 8 59.5	12.636	22	15 27 21.73	2.0431	22 56 49.7	9.017
23	13 56 15.47	1.8464	S.14 21 36.0	12.581	23	15 29 24.46	2.0478	S.23 5 47.8	8.919
	FRIDAY 10.					SUNDAY 12.			
0	13 58 6.35	1.8497	S.14 34 9.2	12.525	0	15 31 27.47	2.0526	S.23 14 40.0	8.821
1	13 59 57.43	1.8530	14 46 39.0	12.468	1	15 33 30.77	2.0574	23 23 26.3	8.721
2	14 1 48.71	1.8563	14 59 5.4	12.411	2	15 35 34.36	2.0622	23 32 6 6	8.620
3	14 3 40.19	1.8597	15 11 28.3	12.353	3	15 37 38.24	2.0671	23 40 40.8	8.519
4	14 5 31.88	1.8632	15 23 47.7	12.294	4	15 39 42 41	2.0720	23 49 8.9	8.417
5	14 7 23.77	1.8667	15 36 3.6	12.234	5	15 41 46.88	2.0769	23 57 30.9	8.315
6	14 9 15.87	1.8702	15 48 15.8	12.173	6	15 43 51.64	2.0817	24 5 46.7	8.212
7	14 11 8.19	1.8738	16 0 24.3	12.111	7	15 45 56.68	2.0865	24 13 56.3	8.107
8	14 13 0.73	1.8775	16 12 29.1	12.049	8	15 48 2.01	2.0913	24 21 59.6	8.002
9	14 14 53.49	1.8812	16 24 30.2	11.986	9	15 50 7.64	2.0961	24 29 56.5	7.895
10	14 16 46.47	1.8849	16 36 27.4	11.921	10	15 52 13.55	2.1009	24 37 47.0	7.787
11	14 18 39.67	1.8887	16 48 20.7	11.856	11	15 54 19.75	2.1057	24 45 31.0	7.679
12	14 20 33.10	1.8925	17 0 10.1	11.790	12	15 56 26.24	2.1105	24 53 8.5	7.570
13	14 22 26.77	1.8964	17 11 55.5	11.722	13	15 58 33.01	2.1153	25 0 39.4	7.459
14	14 24 20.67	1.9003	17 23 36.8	11.654	14	16 0 40.07	2.1201	25 8 3.6	7.348
15	14 26 14.81	1.9043	17 35 14.1	11.585	15	16 2 47.42	2.1249	25 15 21.1	7.236
16	14 28 9.19	1.9083	17 46 47.2	11.517	16	16 4 55.06	2.1297	25 22 31.9	7.123
17	14 30 3.81	1.9123	17 58 16.1	11.447	17	16 7 2.99	2.1345	25 29 35.9	7.011
18	14 31 58.67	1.9164	18 9 40.8	11.376	18	16 9 11.20	2.1392	25 36 33.1	6.896
19	14 33 53.78	1.9205	18 21 1.2	11.303	19	16 11 19.69	2.1439	25 43 23.4	6.780
20	14 35 49.14	1.9246	18 32 17.2	11.230	20	16 13 28.46	2.1486	25 50 6.7	6.664
21	14 37 44.74	1.9288	18 43 28.8	11.256	21	16 15 37.51	2.1532	25 56 43.1	6.547
22	14 39 40.60	1.9330	18 54 36.0	11.082	22	16 17 46.84	2.1578	26 3 12.4	6.429
23	14 41 36.71	1.9373	19 5 38.7	11.007	23	16 19 56.45	2.1624	26 9 34.6	6.310
24	14 43 33.08	1.9417	S.19 16 36.8	10.930	24	16 22 6.33	2.1669	S.26 15 49.6	6.190

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 22 6.33	2.1669	S.26 15 49.6	6.190
1	16 24 16.48	2.1714	26 21 57.4	6.070
2	16 26 26.90	2.1759	26 27 58.0	5.949
3	16 28 37.59	2.1804	26 33 51.3	5.827
4	16 30 48.55	2.1849	26 39 37.2	5.704
5	16 32 59.78	2.1893	26 45 15.7	5.580
6	16 35 11.27	2.1937	26 50 46.8	5.456
7	16 37 23.02	2.1980	26 56 10.4	5.330
8	16 39 35.03	2.2022	27 1 26.4	5.204
9	16 41 47.29	2.2064	27 6 34.9	5.077
10	16 43 59.81	2.2106	27 11 35.7	4.949
11	16 46 12.57	2.2147	27 16 28.8	4.821
12	16 48 25.58	2.2188	27 21 14.2	4.692
13	16 50 38.83	2.2229	27 25 51.8	4.562
14	16 52 52.33	2.2269	27 30 21.6	4.431
15	16 55 6.07	2.2309	27 34 43.5	4.299
16	16 57 20.04	2.2348	27 38 57.5	4.167
17	16 59 34.25	2.2387	27 43 3.6	4.035
18	17 1 48.69	2.2425	27 47 1.7	3.901
19	17 4 4.35	2.2462	27 50 51.7	3.766
20	17 6 19.23	2.2499	27 54 33.6	3.631
21	17 8 33.33	2.2535	27 58 7.4	3.495
22	17 10 48.65	2.2571	28 1 33.0	3.359
23	17 13 4.18	2.2606	S.28 4 50.5	3.223

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 15 19.91	2.2639	S.28 7 59.8	3.086
1	17 17 35.84	2.2672	28 11 0.8	2.947
2	17 19 51.97	2.2705	28 13 53.4	2.807
3	17 22 8.30	2.2737	28 16 37.7	2.668
4	17 24 24.82	2.2768	28 19 13.6	2.528
5	17 26 41.52	2.2798	28 21 41.1	2.387
6	17 28 58.40	2.2828	28 24 0.1	2.246
7	17 31 15.46	2.2857	28 26 10.6	2.104
8	17 33 32.69	2.2885	28 28 12.6	1.962
9	17 35 50.09	2.2913	28 30 6.1	1.820
10	17 38 7.65	2.2940	28 31 51.0	1.677
11	17 40 25.37	2.2967	28 33 27.3	1.533
12	17 42 43.25	2.2992	28 34 55.0	1.389
13	17 45 1.28	2.3017	28 36 14.0	1.244
14	17 47 19.45	2.3040	28 37 24.3	1.098
15	17 49 37.76	2.3062	28 38 25.8	0.952
16	17 51 56.20	2.3084	28 39 18.6	0.806
17	17 54 14.77	2.3106	28 40 2.6	0.659
18	17 56 33.47	2.3127	28 40 37.8	0.512
19	17 58 52.29	2.3147	28 41 4.1	0.365
20	18 1 11.23	2.3166	28 41 21.6	0.218
21	18 3 30.28	2.3183	28 41 30.3	0.071
22	18 5 49.43	2.3199	28 41 30.1	0.077
23	18 8 8.67	2.3215	28 41 21.0	0.227
24	18 10 28.01	2.3230	S.28 41 2.9	0.376

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	18 10 28.01	2.3230	S.28 41 2.9	0.376
1	18 12 47.44	2.3245	28 40 35.9	0.524
2	18 15 6.95	2.3258	28 40 0.0	0.673
3	18 17 26.54	2.3270	28 39 15.1	0.823
4	18 19 46.20	2.3282	28 38 21.2	0.973
5	18 22 5.93	2.3293	28 37 18.3	1.123
6	18 24 25.72	2.3303	28 36 6.4	1.273
7	18 26 45.57	2.3313	28 34 45.5	1.424
8	18 29 5.48	2.3322	28 33 15.5	1.576
9	18 31 25.44	2.3329	28 31 36.4	1.727
10	18 33 45.43	2.3335	28 29 48.3	1.878
11	18 36 5.46	2.3341	28 27 51.1	2.029
12	18 38 25.52	2.3346	28 25 44.8	2.181
13	18 40 45.61	2.3350	28 23 29.4	2.332
14	18 43 5.72	2.3352	28 21 4.9	2.483
15	18 45 25.84	2.3354	28 18 31.4	2.634
16	18 47 45.97	2.3356	28 15 48.8	2.786
17	18 50 6.11	2.3357	28 12 57.1	2.938
18	18 52 26.25	2.3356	28 9 56.2	3.090
19	18 54 46.38	2.3354	28 6 46.3	3.241
20	18 57 6.50	2.3352	28 3 27.3	3.392
21	18 59 26.61	2.3349	27 59 59.2	3.543
22	19 1 46.70	2.3345	27 56 22.1	3.694
23	19 4 6.76	2.3341	S.27 52 35.9	3.846

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 6 26.79	2.3336	S.27 48 40.6	3.997
1	19 8 46.79	2.3330	27 44 36.2	4.148
2	19 11 6.75	2.3323	27 40 22.8	4.298
3	19 13 26.67	2.3316	27 36 0.4	4.449
4	19 15 46.54	2.3307	27 31 28.9	4.600
5	19 18 6.36	2.3298	27 26 48.4	4.750
6	19 20 26.12	2.3288	27 21 58.9	4.900
7	19 22 45.82	2.3277	27 17 0.4	5.050
8	19 25 5.45	2.3266	27 11 52.9	5.200
9	19 27 25.01	2.3254	27 6 36.4	5.350
10	19 29 44.50	2.3242	27 1 10.9	5.499
11	19 32 3.92	2.3230	26 55 36.5	5.647
12	19 34 23.26	2.3216	26 49 53.2	5.796
13	19 36 42.51	2.3201	26 44 1.0	5.944
14	19 39 1.67	2.3186	26 37 59.9	6.092
15	19 41 20.74	2.3170	26 31 49.9	6.240
16	19 43 39.71	2.3153	26 25 31.1	6.387
17	19 45 58.58	2.3136	26 19 3.5	6.533
18	19 48 17.35	2.3118	26 12 27.1	6.680
19	19 50 36.00	2.3100	26 5 41.9	6.826
20	19 52 54.55	2.3082	25 58 47.9	6.972
21	19 55 12.99	2.3063	25 51 45.2	7.117
22	19 57 31.31	2.3043	25 44 33.8	7.262
23	19 59 49.51	2.3023	25 37 13.7	7.407
24	20 2 7.59	2.3003	S.25 29 45.0	7.550

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ' "	"
0	20 2 7.59	2.3003	S.25 29 45.0	7.550
1	20 4 25.55	2.2982	25 22 7.7	7.693
2	20 6 43.38	2.2960	25 14 21.8	7.836
3	20 9 1.07	2.2938	25 6 27.3	7.979
4	20 11 18.63	2.2916	24 58 24.3	8.121
5	20 13 36.06	2.2893	24 50 12.8	8.262
6	20 15 53.35	2.2870	24 41 52.9	8.402
7	20 18 10.50	2.2847	24 33 24.6	8.542
8	20 20 27.51	2.2823	24 24 47.9	8.682
9	20 22 44.38	2.2800	24 16 2.8	8.821
10	20 25 1.11	2.2776	24 7 9.4	8.958
11	20 27 17.69	2.2751	23 58 7.8	9.096
12	20 29 34.12	2.2727	23 48 57.9	9.233
13	20 31 50.41	2.2702	23 39 39.8	9.370
14	20 34 6.55	2.2677	23 30 13.5	9.506
15	20 36 22.53	2.2651	23 20 39.1	9.641
16	20 38 38.36	2.2626	23 10 56.6	9.775
17	20 40 54.04	2.2600	23 1 6.1	9.908
18	20 43 9.56	2.2574	22 51 7.6	10.040
19	20 45 24.93	2.2548	22 41 1.2	10.172
20	20 47 40.14	2.2522	22 30 46.9	10.304
21	20 49 55.19	2.2496	22 20 24.7	10.436
22	20 52 10.09	2.2470	22 9 54.6	10.566
23	20 54 24.83	2.2443	S.21 59 16.8	10.695

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 56 39.41	2.2417	S.21 48 31.3	10.823
1	20 58 53.83	2.2391	21 37 38.1	10.951
2	21 1 8.10	2.2365	21 26 37.2	11.078
3	21 3 22.21	2.2339	21 15 28.7	11.204
4	21 5 36.16	2.2313	21 4 12.7	11.329
5	21 7 49.96	2.2287	20 52 49.2	11.453
6	21 10 3.60	2.2261	20 41 18.3	11.576
7	21 12 17.09	2.2235	20 29 40.0	11.699
8	21 14 30.42	2.2209	20 17 54.4	11.821
9	21 16 43.60	2.2184	20 6 1.5	11.942
10	21 18 56.63	2.2158	19 54 1.4	12.062
11	21 21 9.50	2.2132	19 41 54.0	12.182
12	21 23 22.22	2.2107	19 29 39.5	12.300
13	21 25 34.79	2.2082	19 17 18.0	12.417
14	21 27 47.21	2.2057	19 4 49.5	12.533
15	21 29 59.48	2.2032	18 52 14.0	12.649
16	21 32 11.60	2.2008	18 39 31.6	12.763
17	21 34 23.58	2.1985	18 26 42.4	12.877
18	21 36 35.42	2.1962	18 13 46.4	12.989
19	21 38 47.12	2.1938	18 0 43.7	13.101
20	21 40 58.68	2.1914	17 47 34.3	13.212
21	21 43 10.09	2.1891	17 34 18.3	13.321
22	21 45 21.37	2.1869	17 20 55.8	13.429
23	21 47 32.52	2.1847	17 7 26.8	13.537
24	21 49 43.54	2.1826	S.16 53 51.4	13.644

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ' "	"
0	21 49 43.54	2.1826	S.16 53 51.4	13.644
1	21 51 54.43	2.1805	16 40 9.6	13.750
2	21 54 5.19	2.1784	16 26 21.4	13.855
3	21 56 15.83	2.1763	16 12 26.9	13.959
4	21 58 26.35	2.1743	15 58 26.3	14.061
5	22 0 36.75	2.1723	15 44 19.6	14.162
6	22 2 47.03	2.1703	15 30 6.9	14.262
7	22 4 57.19	2.1684	15 15 48.2	14.361
8	22 7 7.24	2.1666	15 1 23.6	14.458
9	22 9 17.18	2.1648	14 46 53.2	14.555
10	22 11 27.02	2.1630	14 32 17.0	14.651
11	22 13 36.76	2.1613	14 17 35.1	14.745
12	22 15 46.39	2.1597	14 2 47.6	14.838
13	22 17 55.93	2.1582	13 47 54.5	14.931
14	22 20 5.38	2.1567	13 32 55.9	15.023
15	22 22 14.74	2.1552	13 17 51.9	15.111
16	22 24 24.01	2.1538	13 2 42.6	15.199
17	22 26 33.20	2.1525	12 47 28.0	15.287
18	22 28 42.32	2.1513	12 32 8.1	15.374
19	22 30 51.36	2.1501	12 16 43.0	15.459
20	22 33 0.33	2.1489	12 1 12.9	15.543
21	22 35 9.23	2.1478	11 45 37.8	15.626
22	22 37 18.06	2.1467	11 29 57.8	15.707
23	22 39 26.83	2.1457	S.11 14 13.0	15.787

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 41 35.54	2.1448	S.10 58 23.4	15.866
1	22 43 44.20	2.1440	10 42 29.1	15.942
2	22 45 52.82	2.1433	10 26 30.3	16.018
3	22 48 1.40	2.1426	10 10 26.9	16.093
4	22 50 9.94	2.1419	9 54 19.1	16.167
5	22 52 18.43	2.1413	9 38 6.3	16.239
6	22 54 26.89	2.1408	9 21 50.4	16.310
7	22 56 35.32	2.1403	9 5 29.7	16.379
8	22 58 43.73	2.1399	8 49 4.9	16.447
9	23 0 52.12	2.1396	8 32 36.0	16.513
10	23 3 0.50	2.1394	8 16 3.2	16.578
11	23 5 8.87	2.1394	7 59 26.6	16.642
12	23 7 17.23	2.1394	7 42 46.2	16.704
13	23 9 25.59	2.1394	7 26 2.1	16.766
14	23 11 33 96	2.1395	7 9 14.3	16.826
15	23 13 42.34	2.1397	6 52 23.0	16.883
16	23 15 50.73	2.1399	6 35 28.3	16.939
17	23 17 59.13	2.1402	6 18 30.3	16.994
18	23 20 7.55	2.1406	6 1 29.0	17.047
19	23 22 16.00	2.1411	5 44 24.6	17.099
20	23 24 24.49	2.1417	5 27 17.1	17.150
21	23 26 33.01	2.1424	5 10 6.6	17.199
22	23 28 41.58	2.1431	4 52 53.2	17.246
23	23 30 50.19	2.1439	4 35 37.1	17.291
24	23 32 58.85	2.1448	S. 4 18 18.3	17.335

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 32 58.85	2.1448	S. 4 18 18.3	17.335
1	23 35 7.57	2.1458	4 0 56.9	17.377
2	23 37 16.35	2.1469	3 43 33.0	17.418
3	23 39 25.20	2.1481	3 26 6.7	17.457
4	23 41 34.12	2.1494	3 8 38.1	17.495
5	23 43 43.12	2.1507	2 51 7.3	17.530
6	23 45 52.20	2.1521	2 33 34.5	17.563
7	23 48 1.37	2.1536	2 15 59.7	17.596
8	23 50 10.63	2.1552	1 58 23.0	17.627
9	23 52 19.99	2.1568	1 40 44.5	17.656
10	23 54 29.45	2.1586	1 23 4.3	17.683
11	23 56 39.02	2.1604	1 5 22.5	17.708
12	23 58 48.70	2.1623	0 47 39.3	17.732
13	0 0 58.50	2.1643	0 29 54.7	17.754
14	0 3 8.42	2.1664	S. 0 12 8.8	17.774
15	0 5 18.47	2.1687	N. 0 5 38.3	17.793
16	0 7 28.66	2.1710	0 23 26.4	17.809
17	0 9 38.99	2.1733	0 41 15.4	17.823
18	0 11 49.46	2.1757	0 59 5.2	17.836
19	0 14 0.08	2.1783	1 16 55.7	17.847
20	0 16 10.86	2.1810	1 34 46.8	17.856
21	0 18 21.80	2.1837	1 52 38.4	17.863
22	0 20 32.90	2.1865	2 10 30.4	17.868
23	0 22 44.18	2.1894	N. 2 28 22.7	17.871

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 24 55.63	2.1924	N. 2 46 15.1	17.873
1	0 27 7.26	2.1955	3 4 7.5	17.873
2	0 29 19.08	2.1987	3 21 59.8	17.870
3	0 31 31.10	2.2020	3 39 51.9	17.865
4	0 33 43.32	2.2053	3 57 43.6	17.858
5	0 35 55.74	2.2087	4 15 34.9	17.850
6	0 38 8.36	2.2121	4 33 25.6	17.839
7	0 40 21.19	2.2157	4 51 15.6	17.827
8	0 42 34.24	2.2194	5 9 4.7	17.811
9	0 44 47.52	2.2232	5 26 52.9	17.794
10	0 47 1.03	2.2271	5 44 40.0	17.775
11	0 49 14.78	2.2311	6 2 25.9	17.755
12	0 51 28.76	2.2351	6 20 10.6	17.732
13	0 53 42.99	2.2392	6 37 53.8	17.707
14	0 55 57.47	2.2434	6 55 35.4	17.679
15	0 58 12.20	2.2477	7 13 15.3	17.649
16	1 0 27.19	2.2520	7 30 53.3	17.617
17	1 2 42.44	2.2564	7 48 29.4	17.585
18	1 4 57.96	2.2609	8 6 3.5	17.550
19	1 7 13.76	2.2656	8 23 35.4	17.512
20	1 9 29.84	2.2703	8 41 4.9	17.471
21	1 11 46.20	2.2751	8 58 31.9	17.428
22	1 14 2.85	2.2799	9 15 56.3	17.383
23	1 16 19.79	2.2848	9 33 17.9	17.336
24	1 18 37.03	2.2898	N. 9 50 36.6	17.287

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 18 37.03	2.2898	N. 9 50 36.6	17.287
1	1 20 54.57	2.2949	10 7 52.3	17.235
2	1 23 12.42	2.3000	10 25 4.8	17.182
3	1 25 30.57	2.3052	10 42 14.1	17.127
4	1 27 49.04	2.3105	10 59 20.0	17.068
5	1 30 7.83	2.3158	11 16 22.3	17.007
6	1 32 26.94	2.3212	11 33 20.9	16.945
7	1 34 46.38	2.3266	11 50 15.7	16.880
8	1 37 6.15	2.3321	12 7 6.5	16.812
9	1 39 26.25	2.3378	12 23 53.2	16.743
10	1 41 46.69	2.3435	12 40 35.7	16.672
11	1 44 7.47	2.3492	12 57 13.8	16.597
12	1 46 28.60	2.3550	13 13 47.3	16.520
13	1 48 50.08	2.3609	13 30 16.2	16.442
14	1 51 11.91	2.3667	13 46 40.3	16.361
15	1 53 34.09	2.3727	14 2 59.5	16.277
16	1 55 56.63	2.3787	14 19 13.6	16.192
17	1 58 19.54	2.3848	14 35 22.5	16.103
18	2 0 42.81	2.3909	14 51 26.0	16.012
19	2 3 6.44	2.3970	15 7 24.0	15.920
20	2 5 30.44	2.4032	15 23 16.4	15.826
21	2 7 54.82	2.4094	15 39 3.0	15.727
22	2 10 19.57	2.4157	15 54 43.7	15.627
23	2 12 44.70	2.4219	N.16 10 18.3	15.526

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 15 10.20	2.4282	N.16 25 46.8	15.422
1	2 17 36.08	2.4346	16 41 9.0	15.315
2	2 20 2.35	2.4410	16 56 24.6	15.206
3	2 22 29.00	2.4474	17 11 33.6	15.094
4	2 24 56.03	2.4538	17 26 35.9	14.981
5	2 27 23.45	2.4602	17 41 31.3	14.865
6	2 29 51.26	2.4667	17 56 19.7	14.747
7	2 32 19.45	2.4731	18 11 0.9	14.626
8	2 34 48.03	2.4796	18 25 34.8	14.503
9	2 37 17.00	2.4860	18 40 1.3	14.378
10	2 39 46.35	2.4924	18 54 20.2	14.251
11	2 42 16.09	2.4988	19 8 31.5	14.122
12	2 44 46.23	2.5053	19 22 35.0	13.991
13	2 47 16.75	2.5118	19 36 30.5	13.857
14	2 49 47.66	2.5183	19 50 17.8	13.720
15	2 52 18.95	2.5247	20 3 56.9	13.582
16	2 54 50.63	2.5311	20 17 27.6	13.442
17	2 57 22.69	2.5375	20 30 49.9	13.300
18	2 59 55.13	2.5438	20 44 3.6	13.155
19	3 2 27.95	2.5502	20 57 8.5	13.007
20	3 5 1.15	2.5565	21 10 4.5	12.858
21	3 7 34.73	2.5628	21 22 51.5	12.707
22	3 10 8.69	2.5690	21 35 29.4	12.555
23	3 12 43.02	2.5752	21 47 58.1	12.400
24	3 15 17.72	2.5813	N.22 0 17.4	12.242

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 15 17.72	2.5813	N.22 0 17.4	12.242
1	3 17 52.78	2.5873	22 12 27.2	12.084
2	3 20 28.20	2.5933	22 24 27.5	11.924
3	3 23 3.98	2.5993	22 36 18.1	11.761
4	3 25 40.12	2.6052	22 47 58.8	11.595
5	3 28 16.61	2.6110	22 59 29 5	11.428
6	3 30 53.45	2.6168	23 10 50.2	11.260
7	3 33 30.63	2.6225	23 22 0.7	11.089
8	3 36 8.15	2.6281	23 33 0.9	10.917
9	3 38 46.00	2.6335	23 43 50.7	10.743
10	3 41 24.17	2.6389	23 54 30.1	10.568
11	3 44 2.66	2.6442	24 4 58.9	10.391
12	3 46 41.47	2.6494	24 15 17.0	10.212
13	3 49 20.59	2.6545	24 25 24.3	10.031
14	3 52 0.01	2.6595	24 35 20.7	9.848
15	3 54 39.72	2.6644	24 45 6.1	9.665
16	3 57 19.72	2.6691	24 54 40 5	9.480
17	4 0 0.01	2.6737	25 4 3.7	9.293
18	4 2 40.57	2.6782	25 13 15.7	9.106
19	4 5 21.40	2.6826	25 22 16.4	8.916
20	4 8 2.49	2.6869	25 31 5.6	8.725
21	4 10 43.83	2.6910	25 39 43.3	8.533
22	4 13 25.42	2.6950	25 48 9.5	8.340
23	4 16 7.24	2.6988	N.25 56 24.1	8.146

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 18 49.28	2.7025	N.26 4 27.0	7.950
1	4 21 31.54	2.7060	26 12 18.1	7.752
2	4 24 14.00	2.7093	26 19 57.3	7.554
3	4 26 56.66	2.7126	26 27 24.6	7.356
4	4 29 38.51	2.7157	26 34 40.0	7.157
5	4 32 22.55	2.7186	29 41 43.4	6.956
6	4 35 5.76	2.7213	26 48 34.7	6.754
7	4 37 49.12	2.7239	26 55 13.9	6.552
8	4 40 32.63	2.7263	27 1 40.9	6.348
9	4 43 16.29	2.7286	27 7 55.7	6.144
10	4 46 0.07	2.7307	27 13 58.2	5.939
11	4 48 43.97	2.7326	27 19 48.4	5.734
12	4 51 27.98	2.7342	27 25 26.3	5.528
13	4 54 12 08	2.7357	27 30 51.8	5.322
14	4 56 56.27	2.7371	27 36 4.9	5.115
15	4 59 40.53	2.7382	27 41 5.5	4.907
16	5 2 24.85	2.7391	27 45 53.7	4.699
17	5 5 9.22	2.7398	27 50 29.4	4.490
18	5 7 53.63	2.7404	27 54 52.5	4.282
19	5 10 38.07	2.7408	27 59 3.2	4.074
20	5 13 22.53	2.7410	28 3 1.4	3.865
21	5 16 6.99	2.7409	28 6 47.0	3.656
22	5 18 51.44	2.7407	28 10 20.1	3.447
23	5 21 35 87	2.7403	28 13 40.7	3.239
24	5 24 20.27	2.7397	N.28 16 48.8	3.031

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 24 20.27	2.7397	N.28 16 48.8	3.031
1	5 27 4.63	2.7388	28 19 44.4	2.822
2	5 29 48.93	2.7377	28 22 27.4	2.613
3	5 32 33.16	2.7365	28 24 57.9	2.404
4	5 35 17.31	2.7351	28 27 15.9	2.196
5	5 38 1.37	2.7336	28 29 21.4	1.988
6	5 40 45.34	2.7318	28 31 14.5	1.781
7	5 43 29.19	2.7297	28 32 55.1	1.573
8	5 46 12.91	2.7276	28 34 23.3	1.367
9	5 48 56.49	2.7251	28 35 39.2	1.162
10	5 51 39.92	2.7225	28 36 42.7	0.956
11	5 54 23.19	2.7197	28 37 33.9	0.751
12	5 57 6.29	2.7167	28 38 12.8	0.547
13	5 59 49.20	2.7136	28 38 39.5	0.343
14	6 2 31.91	2.7102	28 38 54.0	0.140
15	6 5 14.42	2.7067	28 38 56.3	0.063
16	6 7 56.71	2.7030	28 38 46.4	0.265
17	6 10 38.78	2.6991	28 38 24.5	0.465
18	6 13 20.61	2.6950	28 37 50.6	0.665
19	6 16 2.18	2.6907	28 37 4.7	0.864
20	6 18 43.49	2.6862	28 36 6.9	1.062
21	6 21 24.53	2.6817	28 34 57.3	1.258
22	6 24 5.29	2.6770	28 33 35.9	1.454
23	6 26 45.77	2.6721	N.28 32 2.8	1.648

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 29 25.95	2.6670	N.28 30 18.1	1.842
1	6 32 5 81	2.6617	28 28 21.8	2.034
2	6 34 45.35	2.6563	28 26 14.0	2.226
3	6 37 24.56	2.6507	28 23 54.8	2.415
4	6 40 3.43	2.6449	28 21 24.2	2.603
5	6 42 41.95	2.6390	28 18 42.4	2.790
6	6 45 20.11	2.6330	28 15 49.4	2.976
7	6 47 57.91	2.6269	28 12 45.3	3.160
8	6 50 35 34	2.6206	28 9 30.2	3.343
9	6 53 12.39	2.6142	28 6 4.1	3.526
10	6 55 49.05	2.6076	28 2 27.1	3.707
11	6 58 25.31	2.6009	27 58 39.3	3.886
12	7 1 1.16	2.5941	27 54 40.8	4.063
13	7 3 36.60	2.5872	27 50 31.7	4.239
14	7 6 11 63	2.5803	27 46 12.1	4.413
15	7 8 46.24	2.5732	27 41 42.1	4.586
16	7 11 20 42	2.5660	27 37 1.8	4.757
17	7 13 54.16	2.5587	27 32 11.2	4.927
18	7 16 27.46	2.5512	27 27 10.5	5.096
19	7 19 0.31	2.5436	27 21 59.8	5.261
20	7 21 32.70	2.5360	27 16 39.2	5.426
21	7 24 4.63	2.5283	27 11 8.7	5.590
22	7 26 36.10	2.5206	27 5 28.4	5.752
23	7 29 7.10	2.5128	27 9 38.5	5.912
24	7 31 37.63	2.5049	N.26 53 39.0	6.070

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					THURSDAY 30.				
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	7 31 37.63	2.5049	N.26 53 39.0	6.070	0	8 29 21.25	2.3036	N.23 46 36.9	9.351
1	7 34 7.69	2.4970	26 47 30.1	6.226	1	8 31 39.21	2.2951	23 37 12.4	9.466
2	7 36 37.27	2.4889	26 41 11.9	6.381	2	8 33 56.66	2.2866	23 27 41.1	9.579
3	7 39 6.36	2.4808	26 34 44.4	6.534	3	8 36 13.60	2.2782	23 18 3.0	9.691
4	7 41 34.96	2.4726	26 28 7.8	6.685	4	8 38 30.04	2.2697	23 8 18.2	9.802
5	7 44 3.07	2.4644	26 21 22.2	6.835	5	8 40 45.97	2.2612	22 58 26.8	9.911
6	7 46 30.69	2.4562	26 14 27.6	6.983	6	8 43 1.39	2.2528	22 48 28.9	10.017
7	7 48 57.81	2.4479	26 7 24.2	7.129	7	8 45 16.31	2.2445	22 38 24.7	10.122
8	7 51 24.43	2.4395	26 0 12.1	7.273	8	8 47 30.73	2.2362	22 28 14.2	10.226
9	7 53 50.55	2.4311	25 52 51.4	7.417	9	8 49 44.66	2.2280	22 17 57.6	10.328
10	7 56 16.16	2.4227	25 45 22.1	7.558	10	8 51 58.09	2.2198	22 7 34.9	10.428
11	7 58 41.27	2.4142	25 37 44.4	7.697	11	8 54 11.03	2.2116	21 57 6.2	10.527
12	8 1 5.87	2.4057	25 29 58.4	7.834	12	8 56 23.48	2.2034	21 46 31.6	10.625
13	8 3 29.96	2.3972	25 22 4.3	7.969	13	8 58 35.44	2.1953	21 35 51.2	10.721
14	8 5 53.54	2.3887	25 14 2.1	8.103	14	9 0 46.91	2.1872	21 25 5.1	10.815
15	8 8 16.62	2.3802	25 5 51.9	8.236	15	9 2 57.90	2.1792	21 14 13.4	10.907
16	8 10 39.18	2.3717	24 57 33.8	8.367	16	9 5 8.41	2.1712	21 3 16.2	10.998
17	8 13 1.23	2.3632	24 49 7.8	8.497	17	9 7 18.44	2.1633	20 52 13.6	11.087
18	8 15 22.77	2.3547	24 40 34.1	8.624	18	9 9 28.00	2.1554	20 41 5.7	11.176
19	8 17 43.79	2.3462	24 31 52.9	8.749	19	9 11 37.09	2.1476	20 29 52.5	11.263
20	8 20 4.30	2.3377	24 23 4.3	8.872	20	9 13 45.71	2.1398	20 18 34.1	11.348
21	8 22 24.31	2.3292	24 14 8.3	8.994	21	9 15 53.87	2.1321	20 7 10.7	11.431
22	8 24 43.80	2.3206	24 5 5.0	9.115	22	9 18 1.57	2.1245	19 55 42.4	11.513
23	8 27 2.78	2.3121	23 55 54.5	9.234	23	9 20 8.82	2.1169	19 44 9.2	11.594
24	8 29 21.25	2.3036	N.23 46 36.9	9.351	24	9 22 15.61	2.1094	N.19 32 31.1	11.674

PHASES OF THE MOON.

	Day.	h.	m.
☽ First Quarter, ...	1	1	34.0
○ Full Moon, ...	8	21	28.6
☾ Last Quarter, ...	17	0	0.3
● New Moon, ...	23	19	14.2
☽ First Quarter	30	12	17.7

	Day.	h.
☾ Apogee, ...	10	14.0
☾ Perigee, ...	23	22.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	89 11 0	2835	90 44 43	2851	92 18 5	2866	93 51 7	2882
	α Arietis	W.	64 44 15	2849	66 24 20	2863	68 4 6	2877	69 43 33	2890
	Venus	W.	48 7 49	2692	49 44 39	2707	51 21 9	2721	52 57 21	2735
	Aldebaran	W.	34 45 34	2715	36 21 54	2718	37 58 17	2718	39 34 39	2716
	Regulus	E.	47 7 30	2516	45 26 39	2532	43 46 10	2547	42 6 2	2562
	Spica	E.	101 5 54	2507	99 24 50	2521	97 44 6	2536	96 3 43	2551
2	Sun	W.	101 31 23	2958	103 2 29	2972	104 33 17	2986	106 3 47	3001
	α Arietis	W.	77 56 12	2657	79 33 49	2670	81 11 9	2682	82 48 13	2695
	Venus	W.	60 53 48	2803	62 28 11	2816	64 2 18	2828	65 36 9	2841
	Aldebaran	W.	47 35 9	2744	49 10 51	2751	50 46 23	2759	52 21 45	2767
	Saturn	W.	17 16 41	2856	18 49 56	2844	20 23 27	2834	21 57 11	2826
	Regulus	E.	33 50 35	2638	32 12 32	2653	30 34 49	2668	28 57 26	2684
	Spica	E.	87 46 41	2621	86 8 14	2633	84 30 4	2646	82 52 12	2660
3	Sun	W.	113 32 3	3067	115 0 53	3079	116 29 28	3092	117 57 48	3104
	α Arietis	W.	90 49 17	2756	92 24 42	2769	93 59 51	2780	95 34 45	2792
	Venus	W.	73 21 31	2899	74 53 51	2911	76 25 56	2921	77 57 48	2931
	Aldebaran	W.	60 15 49	2811	61 50 3	2819	63 24 6	2828	64 57 57	2838
	Saturn	W.	29 47 39	2819	31 21 42	2825	32 55 38	2830	34 29 27	2835
	Spica	E.	74 47 11	2721	73 10 59	2733	71 35 3	2744	69 59 22	2755
	Antares	E.	120 40 57	2721	119 4 45	2733	117 28 49	2744	115 53 8	2755
4	Sun	W.	125 15 52	3161	126 42 48	3172	128 9 31	3181	129 36 3	3192
	α Arietis	W.	103 25 39	2846	104 59 8	2855	106 32 24	2866	108 5 27	2876
	Venus	W.	85 33 58	2980	87 4 36	2989	88 35 2	2998	90 5 17	3006
	Aldebaran	W.	72 44 18	2882	74 17 0	2890	75 49 32	2899	77 21 52	2907
	Saturn	W.	42 16 32	2869	43 49 31	2877	45 22 19	2885	46 54 57	2892
	Pollux	W.	28 47 28	2815	30 21 37	2823	31 55 35	2832	33 29 21	2842
	Spica	E.	62 4 30	2808	60 30 12	2818	58 56 7	2827	57 22 17	2836
	Antares	E.	107 58 15	2808	106 23 57	2817	104 49 51	2826	103 15 57	2836
5	Venus	W.	97 34 3	3045	99 3 20	3052	100 32 29	3059	102 1 29	3065
	Aldebaran	W.	85 0 57	2947	86 32 16	2955	88 3 25	2963	89 34 24	2970
	Saturn	W.	54 35 51	2927	56 7 35	2935	57 39 10	2942	59 10 35	2949
	Pollux	W.	41 15 24	2883	42 48 5	2891	44 20 36	2898	45 52 57	2905
	Spica	E.	49 35 46	2880	48 3 1	2887	46 30 25	2895	44 58 1	2903
	Antares	E.	95 29 26	2880	93 56 41	2887	92 24 6	2894	90 51 40	2902
6	Venus	W.	109 24 32	3096	110 52 47	3101	112 20 55	3106	113 48 57	3111
	Aldebaran	W.	97 7 0	3007	98 37 4	3014	100 6 59	3021	101 36 46	3027
	Saturn	W.	66 45 40	2981	68 16 17	2987	69 46 46	2993	71 17 9	2997
	Pollux	W.	53 32 27	2940	55 3 55	2946	56 35 15	2952	58 6 28	2958
	Regulus	W.	16 58 6	2995	18 28 25	2993	19 58 47	2993	21 29 9	2993
	Spica	E.	37 18 16	2939	35 46 46	2945	34 15 24	2951	32 44 10	2957
	Antares	E.	83 11 53	2938	81 40 22	2944	80 8 59	2950	78 37 43	2956
7	Aldebaran	W.	109 3 37	3060	110 32 35	3066	112 1 24	3073	113 30 6	3081
	Saturn	W.	78 47 18	3025	80 17 0	3030	81 46 36	3034	83 16 6	3039
	Pollux	W.	65 40 42	2986	67 11 12	2991	68 41 36	2996	70 11 54	3000
	Regulus	W.	29 0 30	3005	30 30 36	3009	32 0 38	3012	33 30 36	3015
	Spica	E.	25 9 51	2985	23 39 20	2990	22 8 55	2996	20 38 37	3001
	Antares	E.	71 3 16	2984	69 32 43	2989	68 2 17	2994	66 31 57	2999
	α Aquilæ	E.	117 47 32	4085	116 37 16	4063	115 26 38	4040	114 15 38	4020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	95 23 49	2898	96 56 11	2912	98 28 14	2927	99 59 58	2942
	a Arietis	W.	71 22 42	2604	73 1 32	2618	74 40 3	2631	76 18 16	2643
	Venus	W.	54 33 15	2748	56 8 51	2763	57 44 8	2777	59 19 7	2791
	Aldebaran	W.	41 10 57	2720	42 47 10	2725	44 23 17	2730	45 59 17	2736
	Regulus	E.	40 26 15	2577	38 46 49	2593	37 7 44	2607	35 28 59	2623
	Spica	E.	94 23 40	2564	92 43 56	2578	91 4 31	2593	89 25 26	2607
2	Sun	W.	107 34 0	3014	109 3 56	3028	110 33 35	3040	112 2 57	3054
	a Arietis	W.	84 24 59	2708	86 1 28	2720	87 37 41	2733	89 13 37	2745
	Venus	W.	67 9 44	2852	68 43 4	2865	70 16 8	2876	71 48 57	2888
	Aldebaran	W.	53 56 56	2775	55 31 56	2784	57 6 45	2792	58 41 23	2801
	Saturn	W.	23 31 5	2819	25 5 8	2815	26 39 17	2812	28 13 29	2814
	Regulus	E.	27 20 24	2696	25 43 42	2714	24 7 21	2731	22 31 22	2748
	Spica	E.	81 14 38	2672	79 37 21	2685	78 0 21	2698	76 23 38	2710
3	Sun	W.	119 25 53	3115	120 53 44	3128	122 21 20	3138	123 48 43	3150
	a Arietis	W.	97 9 24	2802	98 43 49	2813	100 18 0	2825	101 51 56	2835
	Venus	W.	79 29 27	2942	81 0 53	2952	82 32 6	2961	84 3 8	2970
	Aldebaran	W.	66 31 36	2846	68 5 4	2855	69 38 20	2864	71 11 25	2873
	Saturn	W.	36 3 9	2841	37 36 43	2848	39 10 9	2855	40 43 25	2862
	Spica	E.	68 23 55	2766	66 48 43	2777	65 13 45	2788	63 39 1	2798
	Antares	E.	114 17 41	2766	112 42 28	2777	111 7 30	2788	109 32 46	2798
4	Sun	W.	131 2 22	3201	132 28 30	3210	133 54 27	3220	135 20 13	3230
	a Arietis	W.	109 38 17	2886	111 10 54	2895	112 43 19	2905	114 15 32	2915
	Venus	W.	91 35 22	3014	93 5 17	3022	94 35 2	3030	96 4 37	3038
	Aldebaran	W.	78 54 2	2916	80 26 1	2924	81 57 50	2931	83 29 29	2940
	Saturn	W.	48 27 26	2898	49 59 47	2906	51 31 58	2914	53 3 59	2921
	Pollux	W.	35 2 55	2850	36 36 18	2858	38 9 31	2866	39 42 33	2875
	Spica	E.	55 48 33	2846	54 15 5	2855	52 41 48	2863	51 8 42	2871
	Antares	E.	101 42 16	2845	100 8 47	2854	98 35 29	2862	97 2 22	2871
5	Venus	W.	103 30 21	3072	104 59 5	3078	106 27 41	3084	107 56 10	3090
	Aldebaran	W.	91 5 14	2978	92 35 54	2986	94 6 25	2993	95 36 47	3000
	Saturn	W.	60 41 52	2954	62 13 2	2961	63 44 4	2969	65 14 56	2975
	Pollux	W.	47 25 9	2912	48 57 12	2920	50 29 6	2927	52 0 51	2934
	Spica	E.	43 25 46	2910	41 53 40	2917	40 21 43	2924	38 49 55	2931
	Antares	E.	89 19 24	2910	87 47 18	2917	86 15 21	2924	84 43 33	2931
6	Venus	W.	115 16 53	3116	116 44 43	3121	118 12 27	3125	119 40 6	3130
	Aldebaran	W.	103 6 25	3034	104 35 55	3041	106 5 17	3047	107 34 31	3054
	Saturn	W.	72 47 25	3004	74 17 33	3009	75 47 35	3014	77 17 30	3020
	Pollux	W.	59 37 34	2964	61 8 32	2970	62 39 22	2976	64 10 5	2981
	Regulus	W.	22 59 30	2994	24 29 50	2997	26 0 7	3000	27 30 20	3002
	Spica	E.	31 13 3	2963	29 42 4	2969	28 11 12	2975	26 40 28	2981
	Antares	E.	77 6 35	2962	75 35 34	2968	74 4 41	2973	72 33 55	2979
7	Aldebaran	W.	114 58 39	3087	116 27 4	3094	117 55 21	3101	119 23 29	3109
	Saturn	W.	84 45 30	3044	86 14 48	3049	87 44 0	3052	89 13 8	3057
	Pollux	W.	71 42 7	3005	73 12 14	3009	74 42 15	3014	76 12 10	3018
	Regulus	W.	35 0 30	3019	36 30 19	3022	38 0 4	3026	39 29 45	3030
	Spica	E.	19 8 26	3006	17 38 21	3011	16 8 22	3015	14 38 28	3019
	Antares	E.	65 1 43	3003	63 31 34	3008	62 1 31	3012	60 31 33	3017
	a Aquilæ	E.	113 4 18	4003	111 52 41	3985	110 40 47	3970	109 28 38	3956

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Saturn W.	90 42 10	3061	92 11 7	3065	93 39 59	3069	95 8 46	3073
	Pollux W.	77 42 0	3022	79 11 45	3026	80 41 25	3030	82 11 1	3034
	Regulus W.	40 59 21	3032	42 28 54	3035	43 58 23	3039	45 27 47	3042
	Antares E.	59 1 41	3021	57 31 54	3024	56 2 11	3028	54 32 33	3032
	α Aquilæ E.	108 16 15	3944	107 3 40	3934	105 50 55	3924	104 38 0	3916
9	Saturn W.	102 31 35	3090	103 59 57	3093	105 28 15	3097	106 56 28	3099
	Pollux W.	89 37 57	3049	91 7 9	3052	92 36 17	3055	94 5 22	3056
	Regulus W.	52 53 56	3056	54 23 0	3058	55 52 1	3060	57 20 59	3063
	Antares E.	47 5 28	3047	45 36 14	3051	44 7 4	3053	42 37 57	3055
	α Aquilæ E.	98 31 32	3887	97 17 59	3884	96 4 23	3883	94 50 46	3881
10	Saturn W.	114 16 50	3112	115 44 45	3115	117 12 36	3116	118 40 26	3115
	Pollux W.	101 30 8	3067	102 58 58	3068	104 27 47	3069	105 56 34	3070
	Regulus W.	64 45 13	3071	66 13 58	3073	67 42 41	3073	69 11 23	3074
	Spica W.	10 41 51	3071	12 10 36	3072	13 39 20	3072	15 8 4	3071
	Antares E.	35 12 59	3065	33 44 6	3066	32 15 15	3067	30 46 25	3069
	α Aquilæ E.	88 42 33	3887	87 29 0	3890	86 15 30	3894	85 2 4	3899
	Fomalhaut E.	116 11 2	3338	114 47 35	3333	113 24 2	3328	112 0 23	3325
11	Pollux W.	113 20 15	3073	114 48 58	3073	116 17 41	3073	117 46 25	3072
	Regulus W.	76 34 40	3077	78 3 18	3077	79 31 56	3076	81 0 35	3074
	Spica W.	22 31 42	3072	24 0 26	3072	25 29 10	3072	26 57 54	3071
	Antares E.	23 22 34	3070	21 53 48	3070	20 25 2	3070	18 56 16	3069
	α Aquilæ E.	78 56 21	3934	77 43 36	3943	76 31 0	3952	75 18 33	3963
	Fomalhaut E.	105 1 1	3306	103 36 56	3303	102 12 48	3300	100 48 37	3297
12	Regulus W.	88 24 13	3068	89 53 2	3065	91 21 54	3064	92 50 48	3061
	Spica W.	34 21 58	3064	35 50 52	3061	37 19 49	3059	38 48 49	3056
	α Aquilæ E.	69 19 35	4038	68 8 33	4058	66 57 50	4077	65 47 26	4098
	Fomalhaut E.	93 46 51	3283	92 22 20	3281	90 57 46	3278	89 33 9	3276
	α Pegasi E.	115 9 32	3416	113 47 34	3406	112 25 24	3396	111 3 3	3389
13	Regulus W.	100 16 17	3043	101 45 37	3039	103 15 2	3034	104 44 33	3028
	Spica W.	46 14 48	3038	47 44 14	3034	49 13 45	3029	50 43 22	3023
	α Aquilæ E.	60 1 10	4235	58 53 17	4268	57 45 55	4305	56 39 7	4345
	Fomalhaut E.	82 29 20	3263	81 4 25	3260	79 39 27	3257	78 14 25	3254
	α Pegasi E.	104 8 44	3344	102 45 23	3336	101 21 53	3327	99 58 13	3319
	SUN E.	135 11 17	3410	133 49 12	3405	132 27 1	3400	131 4 44	3394
14	Regulus W.	112 13 53	2997	113 44 9	2991	115 14 38	2984	116 45 6	2976
	Spica W.	58 13 15	2992	59 43 38	2985	61 14 10	2977	62 44 51	2969
	Antares W.	12 19 16	2992	13 49 39	2985	15 20 11	2977	16 50 52	2969
	α Aquilæ E.	51 15 21	4606	50 13 1	4671	49 11 37	4745	48 11 15	4825
	Fomalhaut E.	71 8 30	3242	69 43 10	3239	68 17 47	3237	66 52 22	3236
	α Pegasi E.	92 57 38	3280	91 33 3	3273	90 8 20	3265	88 43 28	3258
	SUN E.	124 11 33	3360	122 48 31	3352	121 25 20	3344	120 1 59	3335
15	Spica W.	70 21 0	2924	71 52 48	2914	73 24 49	2903	74 57 4	2891
	Antares W.	24 27 1	2924	25 58 50	2913	27 30 52	2902	29 3 8	2892
	Fomalhaut E.	59 44 45	3229	58 19 10	3230	56 53 36	3230	55 28 2	3231
	α Pegasi E.	81 36 53	3220	80 11 7	3212	78 45 12	3204	77 19 8	3198
	SUN E.	113 2 33	3286	111 38 5	3274	110 13 23	3263	108 48 28	3251
16	Spica W.	82 42 3	2831	84 15 50	2818	85 49 55	2804	87 24 18	2791

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Saturn	W.	96 37 28	3077	98 6 6	3080	99 34 40	3084	101 3 9	3087
	Pollux	W.	83 40 32	3037	85 9 59	3040	86 39 22	3043	88 8 41	3046
	Regulus	W.	46 57 8	3045	48 26 25	3047	49 55 39	3051	51 24 49	3053
	Antares	E.	53 3 0	3035	51 33 31	3039	50 4 6	3042	48 34 45	3045
	α Aquilæ	E.	103 24 56	3908	102 11 44	3901	100 58 25	3896	99 45 1	3891
9	Saturn	W.	108 24 39	3101	109 52 47	3105	111 20 51	3107	112 48 52	3110
	Pollux	W.	95 34 25	3059	97 3 25	3061	98 32 21	3064	100 1 16	3065
	Regulus	W.	58 49 54	3065	60 18 47	3066	61 47 38	3069	63 16 26	3069
	Antares	E.	41 8 52	3057	39 39 50	3060	38 10 51	3061	36 41 54	3063
	α Aquilæ	E.	93 37 7	3881	92 23 28	3881	91 9 49	3881	89 56 10	3883
10	Saturn	W.	120 8 17	3114	121 36 10	3111	123 4 6	3109	124 32 5	3107
	Pollux	W.	107 25 20	3071	108 54 5	3072	110 22 49	3073	111 51 32	3073
	Regulus	W.	70 40 4	3075	72 8 44	3076	73 37 23	3076	75 6 2	3077
	Spica	W.	16 36 49	3072	18 5 33	3073	19 34 16	3073	21 2 59	3073
	Antares	E.	29 17 37	3069	27 48 50	3070	26 20 4	3071	24 51 19	3071
	α Aquilæ	E.	83 48 43	3904	82 35 27	3910	81 22 17	3918	80 9 15	3925
	Fomalhaut	E.	110 36 40	3320	109 12 52	3316	107 48 59	3313	106 25 2	3309
11	Pollux	W.	119 15 9	3071	120 43 54	3069	122 12 41	3069	123 41 29	3068
	Regulus	W.	82 29 16	3073	83 57 58	3073	85 26 41	3071	86 55 26	3069
	Spica	W.	28 26 39	3069	29 55 26	3068	31 24 15	3066	32 53 6	3065
	Antares	E.	17 27 29	3069	15 58 41	3068	14 29 52	3066	13 1 1	3065
	α Aquilæ	E.	74 6 17	3977	72 54 15	3991	71 42 27	4006	70 30 53	4022
	Fomalhaut	E.	99 24 22	3294	98 0 4	3292	96 35 43	3289	95 11 19	3286
12	Regulus	W.	94 19 45	3058	95 48 46	3054	97 17 52	3051	98 47 2	3047
	Spica	W.	40 17 53	3053	41 47 0	3050	43 16 11	3046	44 45 27	3042
	α Aquilæ	E.	64 37 22	4121	63 27 41	4146	62 18 24	4174	61 9 33	4203
	Fomalhaut	E.	88 8 30	3273	86 43 47	3270	85 19 1	3268	83 54 12	3265
	α Pegasi	E.	109 40 32	3378	108 17 50	3369	106 54 58	3360	105 31 56	3351
13	Regulus	W.	106 14 11	3023	107 43 55	3018	109 13 46	3011	110 43 45	3004
	Spica	W.	52 13 6	3018	53 42 57	3012	55 12 55	3006	56 43 1	2999
	α Aquilæ	E.	55 32 56	4390	54 27 26	4438	53 22 39	4488	52 18 36	4542
	Fomalhaut	E.	76 49 20	3252	75 24 12	3249	73 59 1	3247	72 33 47	3244
	α Pegasi	E.	98 34 24	3312	97 10 26	3304	95 46 19	3296	94 22 3	3288
	Sun	E.	129 42 21	3388	128 19 51	3381	126 57 13	3374	125 34 27	3367
14	Regulus	W.	118 15 49	2967	119 46 43	2958	121 17 48	2950	122 49 4	2941
	Spica	W.	64 15 42	2961	65 46 44	2951	67 17 58	2942	68 49 23	2933
	Antares	W.	18 21 44	2961	19 52 46	2952	21 23 59	2942	22 55 24	2933
	α Aquilæ	E.	47 11 59	4913	46 13 55	5009	45 17 7	5116	44 21 42	5226
	Fomalhaut	E.	65 26 55	3233	64 1 25	3231	62 35 53	3230	61 10 20	3229
	α Pegasi	E.	87 18 27	3250	85 53 17	3242	84 27 58	3235	83 2 30	3227
	Sun	E.	118 38 28	3325	117 14 46	3316	115 50 53	3306	114 26 49	3296
15	Spica	W.	76 29 35	2880	78 2 20	2869	79 35 19	2857	81 8 33	2846
	Antares	W.	30 35 37	2880	32 8 21	2868	33 41 21	2856	35 14 36	2844
	Fomalhaut	E.	54 2 29	3233	52 36 59	3236	51 11 33	3242	49 46 13	3247
	α Pegasi	E.	75 52 56	3190	74 26 35	3183	73 0 6	3176	71 33 28	3169
	Sun	E.	107 23 19	3238	105 57 55	3225	104 32 16	3213	103 6 22	3199
16	Spica	W.	88 58 58	2779	90 33 56	2762	92 9 14	2747	93 44 52	2732

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Antares	W.	36 48 7	2831	38 21 55	2818	39 56 0	2805	41 30 22	2790
	Fomalhaut	E.	48 20 59	3253	46 55 53	3263	45 30 58	3274	44 6 16	3288
	a Pegasi	E.	70 6 42	3163	68 39 49	3158	67 12 49	3152	65 45 42	3147
	Sun	E.	101 40 12	3185	100 13 45	3171	98 47 1	3157	97 20 0	3141
17	Spica	W.	95 20 50	2716	96 57 9	2700	98 33 49	2684	100 10 50	2668
	Antares	W.	49 26 56	2716	51 3 15	2700	52 39 55	2684	54 16 56	2668
	Fomalhaut	E.	37 7 59	3410	35 45 54	3451	34 24 35	3500	33 4 11	3558
	a Pegasi	E.	58 28 47	3130	57 1 14	3130	55 33 41	3131	54 6 9	3133
	Sun	E.	90 0 10	3061	88 31 13	3043	87 1 54	3026	85 32 14	3009
18	Spica	W.	108 21 34	2583	110 0 52	2564	111 40 36	2546	113 20 45	2528
	Antares	W.	62 27 42	2583	64 7 1	2564	65 46 45	2546	67 26 54	2528
	a Pegasi	E.	46 49 57	3176	45 23 19	3193	43 57 2	3214	42 31 10	3241
	Sun	E.	77 58 16	2916	76 26 18	2898	74 53 56	2878	73 21 9	2859
19	Antares	W.	75 54 0	2436	77 36 43	2411	79 19 52	2399	81 3 28	2380
	a Pegasi	E.	35 31 57	3477	34 11 7	3555	32 51 44	3649	31 34 3	3763
	Sun	E.	65 30 54	2760	63 55 34	2741	62 19 48	2720	60 43 35	2701
20	Antares	W.	89 48 8	2289	91 34 23	2272	93 21 4	2253	95 8 12	2237
	a Aquilæ	W.	48 18 33	4036	49 29 37	3929	50 42 27	3839	51 56 59	3753
	Sun	E.	52 35 57	2604	50 57 7	2585	49 17 52	2566	47 38 11	2548
21	Antares	W.	104 10 6	2155	105 59 41	2140	107 49 39	2125	109 40 0	2111
	a Aquilæ	W	58 32 35	3361	59 55 36	3301	61 19 46	3244	62 45 3	3189
	Sun	E.	39 13 39	2463	37 31 34	2448	35 49 8	2433	34 6 21	2420
26	Sun	W.	31 28 58	2381	33 13 0	2394	34 56 44	2406	36 40 10	2420
	Saturn	E.	32 20 12	2173	30 31 4	2194	28 42 27	2218	26 54 26	2245
	Pollux	E.	43 42 52	2077	41 51 18	2091	40 0 5	2105	38 9 13	2118
	Regulus	E.	80 29 9	2079	78 37 38	2092	76 46 27	2104	74 55 35	2118
27	Sun	W.	45 12 9	2497	46 53 26	2515	48 34 19	2532	50 14 48	2548
	Aldebaran	W.	17 46 39	2973	19 17 26	2859	20 50 38	2775	22 25 38	2713
	Pollux	E.	29 0 26	2197	27 11 54	2214	25 23 47	2231	23 36 6	2250
	Regulus	E.	65 46 46	2194	63 58 10	2211	62 9 59	2228	60 22 13	2244
	Spica	E.	119 47 24	2188	117 58 39	2205	116 11 19	2221	114 22 23	2238
28	Sun	W.	58 31 5	2641	60 9 4	2660	61 46 37	2680	63 23 44	2698
	Aldebaran	W.	30 35 10	2585	32 14 26	2578	33 53 51	2575	35 33 20	2577
	Regulus	E.	51 29 43	2333	49 44 32	2351	47 59 47	2370	46 15 29	2388
	Spica	E.	105 29 2	2325	103 43 39	2343	101 58 42	2361	100 14 11	2375
29	Sun	W.	71 22 56	2795	72 57 30	2815	74 31 39	2834	76 5 23	2853
	Aldebaran	W.	43 49 33	2608	45 28 17	2618	47 6 48	2629	48 45 4	2640
	Regulus	E.	37 40 38	2482	35 59 0	2502	34 17 49	2521	32 37 5	2540
	Spica	E.	91 38 2	2469	89 56 5	2487	88 14 33	2505	86 33 27	2522
30	Sun	W.	83 47 59	2946	85 19 20	2964	86 50 18	2981	88 20 54	2999
	Aldebaran	W.	56 52 21	2704	58 28 56	2717	60 5 13	2730	61 41 13	2744
	Saturn	W.	24 37 4	2748	26 12 40	2753	27 48 10	2759	29 23 32	2767
	Regulus	E.	24 20 7	2640	22 42 6	2660	21 4 32	2681	19 27 26	2701
	Spica	E.	78 13 56	2609	76 35 13	2626	74 56 53	2641	73 18 51	2657

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Antares	W.	43 5 3	2776	44 40 2	2762	46 15 20	2747	47 50 58	2732
	Fomalhaut	E.	42 41 50	3304	41 17 43	3324	39 53 59	3348	38 30 43	3376
	α Pegasi	E.	64 18 29	3142	62 51 10	3138	61 23 46	3134	59 56 18	3132
	Sun	E.	95 52 40	3125	94 25 1	3110	92 57 3	3094	91 28 46	3078
17	Spica	W.	101 48 13	2651	103 25 59	2635	105 4 7	2618	106 42 38	2601
	Antares	W.	55 54 19	2651	57 32 5	2634	59 10 14	2617	60 48 46	2599
	Fomalhaut	E.	31 44 51	3627	30 26 46	3711	29 10 11	3811	27 55 20	3928
	α Pegasi	E.	52 38 40	3138	51 11 16	3143	49 43 59	3151	48 16 51	3163
	Sun	E.	84 2 12	2991	82 31 48	2973	81 1 1	2954	79 29 50	2936
18	Spica	W.	115 1 19	2510	116 42 18	2492	118 23 43	2474	120 5 33	2456
	Antares	W.	69 7 28	2510	70 48 27	2492	72 29 52	2473	74 11 43	2455
	α Pegasi	E.	41 5 49	3272	39 41 5	3311	38 17 6	3359	36 54 0	3412
	Sun	E.	71 47 57	2839	70 14 20	2819	68 40 17	2799	67 5 48	2780
19	Antares	W.	82 47 31	2362	84 32 0	2344	86 16 56	2325	88 2 19	2307
	α Pegasi	E.	30 18 22	3899	29 5 1	4068	27 54 23	4261	26 46 54	4500
	Sun	E.	59 6 56	2681	57 29 50	2662	55 52 19	2642	54 14 21	2623
20	Antares	W.	96 55 45	2220	98 43 43	2203	100 32 6	2186	102 20 54	2170
	α Aquilæ	W.	53 13 8	3647	54 30 52	3563	55 50 7	3488	57 10 44	3423
	Sun	E.	45 58 5	2531	44 17 35	2514	42 36 41	2496	40 55 22	2479
21	Antares	W.	111 30 43	2097	113 21 47	2084	115 13 11	2071	117 4 55	2059
	α Aquilæ	W.	64 11 25	3142	65 38 44	3101	67 6 52	3063	68 35 45	3026
	Sun	E.	32 23 15	2407	30 39 50	2394	28 56 7	2382	27 12 6	2371
26	Sun	W.	38 23 16	2434	40 6 2	2449	41 48 27	2465	43 30 29	2481
	Saturn	E.	25 7 5	2274	23 20 28	2309	21 34 41	2348	19 49 52	2391
	Pollux	E.	36 18 42	2133	34 28 33	2148	32 38 47	2163	30 49 24	2180
	Regulus	E.	73 5 4	2133	71 14 55	2148	69 25 9	2163	67 35 46	2178
27	Sun	W.	51 54 54	2566	53 34 35	2585	55 13 50	2604	56 52 40	2623
	Aldebaran	W.	24 2 0	2669	25 39 22	2636	27 17 28	2612	28 56 7	2594
	Pollux	E.	21 48 53	2269	20 2 8	2289	18 15 52	2309	16 30 6	2331
	Regulus	E.	58 34 51	2262	56 47 55	2279	55 1 25	2297	53 15 21	2315
	Spica	E.	112 34 52	2255	110 47 45	2272	109 1 6	2289	107 14 51	2307
28	Sun	W.	65 0 26	2718	66 36 42	2738	68 12 32	2756	69 47 57	2776
	Aldebaran	W.	37 12 47	2579	38 52 11	2583	40 31 29	2591	42 10 37	2599
	Regulus	E.	44 31 37	2407	42 48 12	2426	41 5 14	2445	39 22 43	2463
	Spica	E.	98 30 6	2396	96 46 26	2415	95 3 12	2433	93 20 24	2451
29	Sun	W.	77 38 42	2872	79 11 37	2891	80 44 8	2909	82 16 15	2927
	Aldebaran	W.	50 23 5	2652	52 0 49	2664	53 38 17	2677	55 15 28	2690
	Regulus	E.	30 56 47	2559	29 16 56	2580	27 37 33	2599	25 58 36	2619
	Spica	E.	84 52 45	2540	83 12 27	2557	81 32 33	2574	79 53 3	2591
30	Sun	W.	89 51 8	3016	91 21 1	3033	92 50 33	3050	94 19 44	3067
	Aldebaran	W.	63 16 55	2757	64 52 19	2770	66 27 26	2784	68 2 15	2798
	Saturn	W.	30 58 43	2776	32 33 42	2786	34 8 28	2795	35 43 2	2806
	Regulus	E.	17 50 48	2722	16 14 37	2743	14 38 54	2764	13 3 39	2785
	Spica	E.	71 41 17	2673	70 4 1	2689	68 27 7	2705	66 50 34	2720

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Fri.	1	2 34 22.74	9.544	N.15 8 53.8	45.28	15 54.08	66.07	3 3.21	0.312
Sat.	2	2 38 12.07	9.566	15 26 51.8	44.60	15 53.85	66.15	3 10.41	0.290
Sun.	3	2 42 1.91	9.588	15 44 34.6	43.95	15 53.62	66.23	3 17.10	0.268
Mon.	4	2 45 52.26	9.610	16 2 1.6	43.29	15 53.40	66.31	3 23.28	0.246
Tues.	5	2 49 43.17	9.633	16 19 12.6	42.62	15 53.18	66.39	3 28.93	0.224
Wed.	6	2 53 34.63	9.656	16 36 7.4	41.94	15 52.96	66.48	3 34.03	0.201
Thur.	7	2 57 26.63	9.679	16 52 45.6	41.24	15 52.74	66.56	3 38.57	0.178
Fri.	8	3 1 19.17	9.703	17 9 7.0	40.53	15 52.52	66.64	3 42.57	0.154
Sat.	9	3 5 12.31	9.727	17 25 11.3	39.81	15 52.31	66.72	3 45.98	0.130
Sun.	10	3 9 6.05	9.751	17 40 58.2	39.08	15 52.10	66.80	3 48.79	0.106
Mon.	11	3 13 0.37	9.776	17 56 27.4	38.34	15 51.89	66.89	3 51.02	0.081
Tues.	12	3 16 55.27	9.800	18 11 38.7	37.59	15 51.68	66.97	3 52.67	0.056
Wed.	13	3 20 50.76	9.824	18 26 31.9	36.83	15 51.47	67.05	3 53.74	0.031
Thur.	14	3 24 46.83	9.849	18 41 6.6	36.06	15 51.26	67.13	3 54.22	0.006
Fri.	15	3 28 43.50	9.874	18 55 22.6	35.27	15 51.06	67.21	3 54.11	0.018
Sat.	16	3 32 40.77	9.899	19 9 19.6	34.47	15 50.86	67.29	3 53.41	0.042
Sun.	17	3 36 38.62	9.923	19 22 57.2	33.65	15 50.67	67.37	3 52.12	0.066
Mon.	18	3 40 37.05	9.947	19 36 15.2	32.83	15 50.48	67.45	3 50.25	0.090
Tues.	19	3 44 36.06	9.971	19 49 13.2	32.00	15 50.29	67.53	3 47.82	0.114
Wed.	20	3 48 35.62	9.994	20 1 51.0	31.15	15 50.10	67.61	3 44.82	0.138
Thur.	21	3 52 35.74	10.017	20 14 8.6	30.29	15 49.92	67.69	3 41.25	0.161
Fri.	22	3 56 36.42	10.039	20 26 5.4	29.42	15 49.75	67.76	3 37.13	0.183
Sat.	23	4 0 37.64	10.061	20 37 41.2	28.54	15 49.58	67.83	3 32.48	0.205
Sun.	24	4 4 39.38	10.083	20 48 55.7	27.65	15 49.41	67.90	3 27.31	0.226
Mon.	25	4 8 41.62	10.104	20 59 48.8	26.75	15 49.24	67.97	3 21.64	0.247
Tues.	26	4 12 44.36	10.124	21 10 20.2	25.84	15 49.09	68.04	3 15.47	0.267
Wed.	27	4 16 47.58	10.143	21 20 29.6	24.93	15 48.94	68.11	3 8.83	0.287
Thur.	28	4 20 51.26	10.162	21 30 16.9	24.00	15 48.80	68.18	3 1.73	0.306
Fri.	29	4 24 55.38	10.180	21 39 41.8	23.06	15 48.66	68.25	2 54.19	0.324
Sat.	30	4 28 59.92	10.198	21 48 44.1	22.12	15 48.52	68.31	2 46.23	0.341
Sun.	31	4 33 4.88	10.214	21 57 23.7	21.17	15 48.39	68.37	2 37.85	0.358
Mon.	32	4 37 10.25	10.231	N.22 5 40.3	20.21	15 48.26	68.43	2 29.08	0.374

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Fri.	1	2 34 23.23	9.544	N.15 8 56.2	45.23	3 3.23	0.312	2 37 26.46
Sat.	2	2 38 12.58	9.566	15 26 54.3	44.60	3 10.43	0.290	2 41 23.01
Sun.	3	2 42 2.45	9.588	15 44 37.1	43.95	3 17.12	0.268	2 45 19.57
Mon.	4	2 45 52.83	9.610	16 2 4.1	43.29	3 23.29	0.246	2 49 16.12
Tues.	5	2 49 43.75	9.633	16 19 15.1	42.62	3 28.93	0.224	2 53 12.68
Wed.	6	2 53 35.21	9.656	16 36 9.9	41.94	3 34.03	0.201	2 57 9.24
Thur.	7	2 57 27.22	9.679	16 52 48.1	41.24	3 38.58	0.178	3 1 5.80
Fri.	8	3 1 19.77	9.703	17 9 9.5	40.53	3 42.58	0.154	3 5 2.35
Sat.	9	3 5 12.92	9.727	17 25 13.8	39.81	3 45.99	0.130	3 8 58.91
Sun.	10	3 9 6.67	9.751	17 41 0.7	39.08	3 48.80	0.106	3 12 55.47
Mon.	11	3 13 1.00	9.776	17 56 29.9	38.34	3 51.02	0.081	3 16 52.02
Tues.	12	3 16 55.91	9.800	18 11 41.2	37.59	3 52.67	0.056	3 20 48.58
Wed.	13	3 20 51.40	9.824	18 26 34.4	36.83	3 53.73	0.031	3 24 45.13
Thur.	14	3 24 47.47	9.849	18 41 9.0	36.06	3 54.22	0.006	3 28 41.69
Fri.	15	3 28 44.14	9.874	18 55 24.9	35.27	3 54.11	0.018	3 32 38.25
Sat.	16	3 32 41.40	9.899	19 9 21.8	34.47	3 53.41	0.042	3 36 34.81
Sun.	17	3 36 39.25	9.923	19 22 59.3	33.65	3 52.12	0.066	3 40 31.37
Mon.	18	3 40 37.68	9.947	19 36 17.2	32.83	3 50.25	0.089	3 44 27.93
Tues.	19	3 44 36.68	9.970	19 49 15.2	32.00	3 47.81	0.114	3 48 24.49
Wed.	20	3 48 36.23	9.994	20 1 53.0	31.15	3 44.81	0.138	3 52 21.04
Thur.	21	3 52 36.35	10.017	20 14 10.5	30.29	3 41.24	0.161	3 56 17.59
Fri.	22	3 56 37.03	10.039	20 26 7.2	29.42	3 37.12	0.183	4 0 14.15
Sat.	23	4 0 38.23	10.061	20 37 42.9	28.54	3 32.47	0.205	4 4 10.70
Sun.	24	4 4 39.96	10.083	20 48 57.3	27.65	3 27.30	0.226	4 8 7.26
Mon.	25	4 8 42.19	10.104	20 59 50.3	26.75	3 21.63	0.247	4 12 3.82
Tues.	26	4 12 44.92	10.124	21 10 21.6	25.84	3 15.46	0.267	4 16 0.38
Wed.	27	4 16 48.12	10.143	21 20 30.9	24.93	3 8.82	0.287	4 19 56.94
Thur.	28	4 20 51.78	10.162	21 30 18.1	24.00	3 1.72	0.306	4 23 53.50
Fri.	29	4 24 55.88	10.180	21 39 42.9	23.06	2 54.18	0.324	4 27 50.06
Sat.	30	4 29 0.40	10.198	21 48 45.1	22.12	2 46.21	0.341	4 31 46.61
Sun.	31	4 33 5.34	10.214	21 57 24.6	21.17	2 37.83	0.358	4 35 43.17
Mon.	32	4 37 10.66	10.231	N.22 5 41.1	20.21	2 29.07	0.374	4 39 39.73

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	121	41 1 58.6	1 44.4	145.40	+0.20	0.0035922	43.3	21 19 3.43
2	122	41 60 7.3	59 52.9	145.32	+0.10	.0036957	42.9	21 15 7.52
3	123	42 58 14.0	57 59.5	145.24	—0.01	.0037984	42.6	21 11 11.61
4	124	43 56 18.7	56 4.0	145.16	0.13	.0039002	42.3	21 7 15.70
5	125	44 54 21.5	54 6.7	145.08	0.26	.0040012	42.0	21 3 19.79
6	126	45 52 22.4	52 7.3	145.00	0.40	.0041015	41.7	20 59 23.88
7	127	46 50 21.4	50 6.2	144.93	0.54	.0042011	41.4	20 55 27.96
8	128	47 48 18.8	48 3.5	144.86	0.65	.0043000	41.0	20 51 32.05
9	129	48 46 14.6	45 59.2	144.79	0.75	.0043982	40.7	20 47 36.14
10	130	49 44 8.9	43 53.3	144.73	0.82	.0044956	40.4	20 43 40.23
11	131	50 42 1.8	41 46.1	144.67	0.86	.0045921	40.0	20 39 44.32
12	132	51 39 53.4	39 37.6	144.62	0.89	.0046878	39.7	20 35 48.41
13	133	52 37 43.6	37 27.6	144.57	0.88	.0047826	39.3	20 31 52.50
14	134	53 35 32.6	35 16.4	144.52	0.83	.0048764	38.8	20 27 56.59
15	135	54 33 20.5	33 4.1	144.47	0.76	.0049691	38.3	20 24 0.67
16	136	55 31 7.3	30 50.7	144.42	0.65	.0050603	37.7	20 20 4.75
17	137	56 28 53.0	28 36.2	144.38	0.54	.0051500	37.0	20 16 8.84
18	138	57 26 37.5	26 20.5	144.33	0.42	.0052380	36.8	20 12 12.93
19	139	58 24 20.9	24 3.7	144.28	0.28	.0053242	35.5	20 8 17.02
20	140	59 22 3.2	21 45.9	144.23	0.16	.0054084	34.7	20 4 21.11
21	141	60 19 44.4	19 26.9	144.19	—0.04	.0054906	33.8	20 0 25.20
22	142	61 17 24.5	17 6.8	144.15	+0.07	.0055707	32.9	19 56 29.29
23	143	62 15 3.4	14 45.6	144.10	0.16	.0056485	32.0	19 52 33.38
24	144	63 12 41.1	12 23.1	144.05	0.22	.0057242	31.0	19 48 37.47
25	145	64 10 17.6	9 59.5	144.00	0.25	.0057976	30.1	19 44 41.55
26	146	65 7 52.9	7 34.6	143.94	0.25	.0058687	29.2	19 40 45.64
27	147	66 5 26.9	5 8.4	143.89	0.22	.0059376	28.2	19 36 49.73
28	148	67 2 59.5	2 40.9	143.83	0.17	.0060044	27.4	19 32 53.82
29	149	68 0 30.8	0 12.0	143.78	+0.08	.0060692	26.5	19 28 57.91
30	150	68 58 0.8	57 41.9	143.72	—0.02	.0061319	25.7	19 25 1.99
31	151	69 55 29.4	55 10.4	143.66	0.14	.0061927	24.9	19 21 6.08
32	152	70 52 56.7	52 37.5	143.61	—0.28	0.0062517	24.3	19 17 10.17

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	15 24.2	15 18.1	56 25.4	−1.96	56 2.8	−1.80	6 58.2	1.95	7.2
2	15 12.5	15 7.4	55 42.2	1.64	55 23.4	1.48	7 43.1	1.80	8.2
3	15 2.8	14 58.8	55 6.6	1.32	54 51.8	1.16	8 24.9	1.69	9.2
4	14 55.3	14 52.3	54 38.9	0.99	54 27.9	0.83	9 4.7	1.64	10.2
5	14 49.8	14 47.8	54 18.8	0.68	54 11.6	0.54	9 43.9	1.63	11.2
6	14 46.3	14 45.2	54 5.9	0.40	54 1.8	0.27	10 23.4	1.67	12.2
7	14 44.5	14 44.2	53 59.2	−0.15	53 58.2	−0.03	11 4.5	1.75	13.2
8	14 44.2	14 44.6	53 58.4	+0.08	53 59.9	+0.18	11 47.8	1.86	14.2
9	14 45.4	14 46.5	54 2.8	0.28	54 6.9	0.39	12 34.0	1.99	15.2
10	14 48.0	14 49.8	54 12.3	0.50	54 19.0	0.62	13 23.3	2.11	16.2
11	14 52.0	14 54.6	54 27.1	0.74	54 36.6	0.86	14 15.2	2.20	17.2
12	14 57.6	15 1.1	54 47.6	0.98	55 0.1	1.10	15 8.5	2.24	18.2
13	15 4.9	15 9.1	55 14.2	1.23	55 29.8	1.36	16 2.0	2.21	19.2
14	15 13.8	15 18.9	55 47.0	1.49	56 5.8	1.62	16 54.3	2.14	20.2
15	15 24.4	15 30.4	56 26.1	1.75	56 47.9	1.87	17 44.7	2.06	21.2
16	15 36.7	15 43.3	57 11.0	1.97	57 35.2	2.06	18 33.3	2.00	22.2
17	15 50.1	15 57.1	58 0.3	2.11	58 25.9	2.14	19 20.8	1.97	23.2
18	16 4.1	16 11.0	58 51.6	2.13	59 16.9	2.07	20 8.2	1.99	24.2
19	16 17.6	16 23.8	59 41.2	1.97	60 4.0	1.81	20 57.0	2.08	25.2
20	16 29.3	16 34.1	60 24.5	1.59	60 42.0	1.32	21 48.7	2.28	26.2
21	16 37.9	16 40.6	60 56.0	1.00	61 6.0	+0.65	22 44.5	2.43	27.2
22	16 42.2	16 42.4	61 11.6	+0.27	61 12.4	−0.13	23 45.1	2.62	28.2
23	16 41.3	16 39.0	61 8.5	−0.53	60 59.8	0.91	6		29.2
24	16 35.4	16 30.7	60 46.7	1.26	60 29.5	1.58	0 49.6	2.74	0.9
25	16 25.0	16 18.6	60 8.7	1.86	59 45.0	2.07	1 55.6	2.73	1.9
26	16 11.6	16 4.1	59 19.2	2.22	58 51.8	2.33	2 59.3	2.57	2.9
27	15 56.4	15 48.6	58 23.4	2.38	57 54.8	2.37	3 58.2	2.33	3.9
28	15 40.9	15 33.4	57 26.6	2.32	56 59.2	2.23	4 51.3	2.09	4.9
29	15 26.3	15 19.7	56 33.1	2.10	56 8.7	1.96	5 39.0	1.90	5.9
30	15 13.6	15 8.0	55 46.1	1.80	55 25.6	1.62	6 22.6	1.75	6.9
31	15 3.0	14 58.6	55 7.3	1.43	54 51.3	1.24	7 3.5	1.67	7.9
32	14 54.9	14 51.8	54 37.6	−1.05	54 26.2	−0.85	7 43.0	1.63	8.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	9 22 15.61	2.1097	N.19 32 31.1	11.678
1	9 24 21.96	2.1021	19 20 48.2	11.752
2	9 26 27.86	2.0947	19 9 0.9	11.826
3	9 28 33.32	2.0873	18 57 9.1	11.901
4	9 30 38.34	2.0800	18 45 12.8	11.975
5	9 32 42.92	2.0728	18 33 12.1	12.048
6	9 34 47.08	2.0657	18 21 7.0	12.120
7	9 36 50.81	2.0587	18 8 57.7	12.189
8	9 38 54.12	2.0517	17 56 44.3	12.256
9	9 40 57.02	2.0448	17 44 27.0	12.322
10	9 42 59.50	2.0379	17 32 5.7	12.388
11	9 45 1.57	2.0312	17 19 40.4	12.454
12	9 47 3.25	2.0247	17 7 11.2	12.518
13	9 49 4.53	2.0180	16 54 38.2	12.580
14	9 51 5.41	2.0114	16 42 1.6	12.639
15	9 53 5.90	2.0049	16 29 21.5	12.697
16	9 55 6.00	1.9986	16 16 37.9	12.756
17	9 57 5.73	1.9924	16 3 50.8	12.814
18	9 59 5.09	1.9862	15 51 0.2	12.871
19	10 1 4.07	1.9799	15 38 6.3	12.924
20	10 3 2.68	1.9739	15 25 9.3	12.976
21	10 5 0.94	1.9680	15 12 9.2	13.027
22	10 6 58.84	1.9620	14 59 6.0	13.079
23	10 8 56.38	1.9561	N.14 45 59.7	13.130

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 10 53.57	1.9503	N.14 32 50.4	13.179
1	10 12 50.42	1.9447	14 19 38.2	13.227
2	10 14 46.93	1.9392	14 6 23.2	13.272
3	10 16 43.12	1.9337	13 53 5.5	13.317
4	10 18 38.98	1.9283	13 39 45.1	13.362
5	10 20 34.52	1.9230	13 26 22.1	13.404
6	10 22 29.74	1.9177	13 12 56.6	13.446
7	10 24 24.64	1.9124	12 59 28.6	13.487
8	10 26 19.23	1.9074	12 45 58.1	13.528
9	10 28 13.53	1.9025	12 32 25.2	13.567
10	10 30 7.53	1.8975	12 18 50.0	13.605
11	10 32 1.23	1.8925	12 5 12.6	13.642
12	10 33 54.64	1.8877	11 51 33.0	13.678
13	10 35 47.76	1.8832	11 37 51.3	13.713
14	10 37 40.61	1.8786	11 24 7.5	13.748
15	10 39 33.19	1.8741	11 10 21.6	13.781
16	10 41 25.50	1.8696	10 56 33.8	13.812
17	10 43 17.54	1.8652	10 42 44.1	13.842
18	10 45 9.33	1.8610	10 28 52.7	13.872
19	10 47 0.86	1.8568	10 14 59.5	13.902
20	10 48 52.14	1.8528	10 1 4.5	13.931
21	10 50 43.19	1.8488	9 47 7.8	13.958
22	10 52 34.00	1.8448	9 33 9.5	13.983
23	10 54 24.57	1.8409	0 19 9.7	14.009
24	10 56 14.91	1.8371	N. 9 5 8.4	14.034

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 56 14.91	1.8371	N. 9 5 8.4	14.034
1	10 58 5.02	1.8334	8 51 5.6	14.056
2	10 59 54.92	1.8299	8 37 1.4	14.081
3	11 1 44.61	1.8264	8 22 55.9	14.102
4	11 3 34.09	1.8229	8 8 49.1	14.123
5	11 5 23.36	1.8195	7 54 41.1	14.144
6	11 7 12.43	1.8162	7 40 31.8	14.164
7	11 9 1.31	1.8130	7 26 21.4	14.182
8	11 10 50.00	1.8100	7 12 9.9	14.198
9	11 12 38.51	1.8070	6 57 57.5	14.215
10	11 14 26.84	1.8040	6 43 44.1	14.232
11	11 16 14.99	1.8012	6 29 29.7	14.247
12	11 18 2.98	1.7984	6 15 14.4	14.262
13	11 19 50.80	1.7957	6 0 58.3	14.275
14	11 21 38.46	1.7930	5 46 41.4	14.287
15	11 23 25.96	1.7904	5 32 23.8	14.299
16	11 25 13.31	1.7878	5 18 5.5	14.311
17	11 27 0.51	1.7855	5 3 46.5	14.322
18	11 28 47.58	1.7833	4 49 26.9	14.331
19	11 30 34.51	1.7811	4 35 6.8	14.339
20	11 32 21.31	1.7789	4 20 46.2	14.347
21	11 34 7.98	1.7768	4 6 25.1	14.355
22	11 35 54.53	1.7748	3 52 3.6	14.361
23	11 37 40.96	1.7730	N. 3 37 41.8	14.366

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 39 27.29	1.7712	N. 3 23 19.7	14.371
1	11 41 13.51	1.7694	3 8 57.3	14.375
2	11 42 59.62	1.7677	2 54 34.7	14.378
3	11 44 45.63	1.7661	2 40 11.9	14.381
4	11 46 31.55	1.7646	2 25 49.0	14.384
5	11 48 17.38	1.7632	2 11 25.9	14.385
6	11 50 3.13	1.7618	1 57 2.8	14.385
7	11 51 48.80	1.7605	1 42 39.7	14.385
8	11 53 34.39	1.7592	1 28 16.6	14.383
9	11 55 19.91	1.7582	1 13 53.7	14.380
10	11 57 5.37	1.7572	0 59 31.0	14.378
11	11 58 50.77	1.7562	0 45 8.4	14.375
12	12 0 36.11	1.7552	0 30 46.0	14.371
13	12 2 21.40	1.7543	0 16 23.9	14.366
14	12 4 6.64	1.7536	N. 0 2 2.1	14.360
15	12 5 51.83	1.7529	S. 0 12 19.3	14.353
16	12 7 36.99	1.7524	0 26 40.3	14.347
17	12 9 22.11	1.7517	0 41 0.9	14.340
18	12 11 7.20	1.7513	0 55 21.1	14.332
19	12 12 52.27	1.7510	1 9 40.7	14.322
20	12 14 37.32	1.7507	1 23 59.7	14.312
21	12 16 22.35	1.7504	1 38 18.1	14.301
22	12 18 7.37	1.7502	1 52 35.8	14.289
23	12 19 52.38	1.7502	2 6 52.8	14.277
24	12 21 37.39	1.7502	S. 2 21 9.1	14.265

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 21 37.39	1.7502	S. 2 21 9.1	14.265
1	12 23 22.40	1.7502	2 35 24.6	14.252
2	12 25 7.42	1.7503	2 49 39.3	14.237
3	12 26 52.44	1.7505	3 3 53.0	14.221
4	12 28 37.48	1.7508	3 18 5.8	14.206
5	12 30 22.54	1.7510	3 32 17.7	14.190
6	12 32 7.61	1.7514	3 46 28.6	14.178
7	12 33 52.71	1.7520	4 0 38.4	14.154
8	12 35 37.85	1.7526	4 14 47.1	14.136
9	12 37 23.02	1.7532	4 28 54.7	14.117
10	12 39 8.23	1.7539	4 43 1.1	14.097
11	12 40 53.49	1.7547	4 57 6.3	14.075
12	12 42 38.79	1.7554	5 11 10.1	14.058
13	12 44 24.14	1.7563	5 25 12.6	14.031
14	12 46 9.55	1.7573	5 39 13.8	14.009
15	12 47 55.02	1.7583	5 53 13.7	13.985
16	12 49 40.55	1.7594	6 7 12.1	13.960
17	12 51 26.15	1.7607	6 21 8.9	13.934
18	12 53 11.83	1.7619	6 35 4.2	13.908
19	12 54 57.58	1.7632	6 48 57.9	13.881
20	12 56 43.41	1.7646	7 2 50.0	13.854
21	12 58 29.33	1.7661	7 16 40.5	13.826
22	13 0 15.34	1.7676	7 30 29.3	13.797
23	13 2 1.44	1.7690	S. 7 44 16.2	13.767

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 3 47.63	1.7707	S. 7 58 1.3	13.737
1	13 5 33.93	1.7725	8 11 44.6	13.706
2	13 7 20.33	1.7742	8 25 26.0	13.674
3	13 9 6.83	1.7759	8 39 5.4	13.641
4	13 10 53.44	1.7779	8 52 42.9	13.608
5	13 12 40.18	1.7800	9 6 18.4	13.574
6	13 14 27.04	1.7820	9 19 51.7	13.538
7	13 16 14.02	1.7840	9 33 22.9	13.502
8	13 18 1.12	1.7862	9 46 52.0	13.466
9	13 19 48.36	1.7884	10 0 18.9	13.429
10	13 21 35.73	1.7907	10 13 43.5	13.390
11	13 23 23.24	1.7930	10 27 5.7	13.350
12	13 25 10.89	1.7953	10 40 25.5	13.310
13	13 26 58.68	1.7978	10 53 42.9	13.270
14	13 28 46.63	1.8004	11 6 57.9	13.230
15	13 30 34.73	1.8030	11 20 10.5	13.189
16	13 32 22.99	1.8057	11 33 20.6	13.148
17	13 34 11.41	1.8083	11 46 28.0	13.101
18	13 35 59.99	1.8111	11 59 32.7	13.055
19	13 37 48.74	1.8139	12 12 34.7	13.011
20	13 39 37.66	1.8167	12 25 34.1	12.966
21	13 41 26.75	1.8197	12 38 30.7	12.919
22	13 43 16.02	1.8227	12 51 24.4	12.870
23	13 45 5.47	1.8257	13 4 15.1	12.821
24	13 46 55.11	1.8289	S.13 17 2.9	12.772

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m
	h. m. s.	s.	° ′ ″	″
0	13 46 55.11	1.8289	S.13 17 2.9	12.772
1	13 48 44.94	1.8321	13 29 47.7	12.722
2	13 50 34.96	1.8352	13 42 29.5	12.671
3	13 52 25.16	1.8383	13 55 8.2	12.619
4	13 54 15.56	1.8417	14 7 43.8	12.566
5	13 56 6.17	1.8452	14 20 16.2	12.513
6	13 57 56.99	1.8487	14 32 45.4	12.459
7	13 59 48.01	1.8521	14 45 11.3	12.404
8	14 1 39.24	1.8556	14 57 33.8	12.347
9	14 3 30.68	1.8591	15 9 52.9	12.289
10	14 5 22.33	1.8627	15 22 8.5	12.231
11	14 7 14.21	1.8665	15 34 20.7	12.172
12	14 9 6.31	1.8702	15 46 29.3	12.113
13	14 10 58.64	1.8740	15 58 34.3	12.053
14	14 12 51.19	1.8779	16 10 35.7	11.992
15	14 14 43.97	1.8817	16 22 33.3	11.929
16	14 16 36.98	1.8856	16 34 27.2	11.866
17	14 18 30.24	1.8897	16 46 17.3	11.803
18	14 20 23.74	1.8937	16 58 3.6	11.739
19	14 22 17.48	1.8977	17 9 46.0	11.673
20	14 24 11.46	1.9017	17 21 24.3	11.605
21	14 26 5.68	1.9058	17 32 58.6	11.537
22	14 28 0.15	1.9100	17 44 28.8	11.468
23	14 29 54.88	1.9142	S.17 55 54.9	11.398

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m
0	14 31 49.86	1.9184	S.18 7 16.7	11.328
1	14 33 45.09	1.9228	18 18 34.3	11.257
2	14 35 40.59	1.9272	18 29 47.6	11.186
3	14 37 36.35	1.9315	18 40 56.6	11.114
4	14 39 32.37	1.9358	18 52 1.2	11.040
5	14 41 28.65	1.9402	19 3 1.3	10.965
6	14 43 25.19	1.9447	19 13 56.9	10.889
7	14 45 22.01	1.9492	19 24 47.9	10.812
8	14 47 19.10	1.9537	19 35 34.3	10.734
9	14 49 16.46	1.9583	19 46 16.0	10.656
10	14 51 14.10	1.9629	19 56 53.0	10.576
11	14 53 12.01	1.9675	20 7 25.1	10.494
12	14 55 10.20	1.9722	20 17 52.3	10.413
13	14 57 8.67	1.9768	20 28 14.6	10.331
14	14 59 7.42	1.9815	20 38 32.0	10.248
15	15 1 6.45	1.9862	20 48 44.4	10.164
16	15 3 5.77	1.9910	20 58 51.7	10.079
17	15 5 5.37	1.9957	21 8 53.9	9.992
18	15 7 5.26	2.0006	21 18 50.8	9.906
19	15 9 5.44	2.0053	21 28 42.5	9.817
20	15 11 5.90	2.0101	21 38 28.9	9.728
21	15 13 6.65	2.0150	21 48 9.9	9.638
22	15 15 7.70	2.0198	21 57 45.5	9.547
23	15 17 9.03	2.0245	22 7 15.6	9.456
24	15 19 10.65	2.0294	S.22 16 40.2	9.364

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	15 19 10.65	2.0294	S.22 16 40.2	9.364
1	15 21 12.56	2.0343	22 25 59.2	9.270
2	15 23 14.77	2.0393	22 35 12.5	9.175
3	15 25 17.28	2.0442	22 44 20.1	9.079
4	15 27 20.08	2.0491	22 53 21.9	8.982
5	15 29 23.17	2.0540	23 2 17.9	8.884
6	15 31 26.56	2.0589	23 11 8.0	8.785
7	15 33 30.24	2.0638	23 19 52.1	8.686
8	15 35 34.22	2.0688	23 28 30.3	8.586
9	15 37 38.50	2.0737	23 37 2.4	8.484
10	15 39 43.07	2.0786	23 45 28.4	8.383
11	15 41 47.93	2.0834	23 53 48.3	8.279
12	15 43 53.08	2.0883	24 2 1.9	8.174
13	15 45 58.53	2.0932	24 10 9.2	8.069
14	15 48 4.27	2.0981	24 18 10.2	7.964
15	15 50 10.30	2.1029	24 26 4.9	7.857
16	15 52 16.62	2.1078	24 33 53.1	7.748
17	15 54 23.24	2.1127	24 41 34.7	7.638
18	15 56 30.14	2.1174	24 49 9.7	7.528
19	15 58 37.33	2.1222	24 56 38.1	7.418
20	16 0 44.81	2.1271	25 3 59.9	7.307
21	16 2 52.58	2.1318	25 11 15.0	7.195
22	16 5 0.63	2.1366	25 18 23.3	7.082
23	16 7 8.97	2.1414	S.25 25 24.8	6.967

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 9 17.59	2.1460	S.25 32 19.4	6.851
1	16 11 26.49	2.1507	25 39 7.0	6.735
2	16 13 35.67	2.1552	25 45 47.7	6.619
3	16 15 45.12	2.1597	25 52 21.3	6.501
4	16 17 54.84	2.1643	25 58 47.8	6.382
5	16 20 4.84	2.1689	26 5 7.2	6.262
6	16 22 15.11	2.1734	26 11 19.3	6.142
7	16 24 25.65	2.1778	26 17 24.2	6.021
8	16 26 36.45	2.1822	26 23 21.8	5.898
9	16 28 47.52	2.1866	26 29 12.0	5.775
10	16 30 58.85	2.1909	26 34 54.8	5.651
11	16 33 10.43	2.1952	26 40 30.2	5.526
12	16 35 22.27	2.1994	26 45 58.0	5.401
13	16 37 34.36	2.2036	26 51 18.3	5.275
14	16 39 46.70	2.2077	26 56 31.0	5.148
15	16 41 59.29	2.2119	27 1 36.1	5.021
16	16 44 12.13	2.2159	27 6 33.5	4.893
17	16 46 25.20	2.2198	27 11 23.2	4.763
18	16 48 38.51	2.2238	27 16 5.0	4.632
19	16 50 52.06	2.2277	27 20 39.0	4.502
20	16 53 5.83	2.2313	27 25 5.2	4.371
21	16 55 19.82	2.2351	27 29 23.5	4.238
22	16 57 34.04	2.2388	27 33 33.8	4.105
23	16 59 48.48	2.2423	27 37 36.1	3.971
24	17 2 3.12	2.2457	S.27 41 30.3	3.836

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 2 3.12	2.2457	S.27 41 30.3	3.836
1	17 4 17.97	2.2492	27 45 16.4	3.701
2	17 6 33.03	2.2527	27 48 54.5	3.566
3	17 8 48.30	2.2561	27 52 24.4	3.430
4	17 11 3.77	2.2593	27 55 46.1	3.293
5	17 13 19.42	2.2624	27 58 59.6	3.156
6	17 15 35.26	2.2656	28 2 4.8	3.018
7	17 17 51.29	2.2686	28 5 1.7	2.879
8	17 20 7.50	2.2715	28 7 50.3	2.740
9	17 22 23.87	2.2743	28 10 30.5	2.600
10	17 24 40.41	2.2772	28 13 2.3	2.460
11	17 26 57.13	2.2800	28 15 25.7	2.319
12	17 29 14.01	2.2826	28 17 40.5	2.177
13	17 31 31.04	2.2851	28 19 46.8	2.036
14	17 33 48.22	2.2875	28 21 44.7	1.893
15	17 36 5.54	2.2898	28 23 34.0	1.750
16	17 38 23.00	2.2920	28 25 14.7	1.607
17	17 40 40.59	2.2942	28 26 46.8	1.464
18	17 42 58.31	2.2964	28 28 10.4	1.320
19	17 45 16.16	2.2985	28 29 25.3	1.175
20	17 47 34.13	2.3003	28 30 31.4	1.030
21	17 49 52.20	2.3021	28 31 28.9	0.886
22	17 52 10.38	2.3039	28 32 17.6	0.739
23	17 54 28.67	2.3057	S.28 32 57.6	0.593

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 56 47.06	2.3073	S.28 33 28.8	0.447
1	17 59 5.54	2.3087	28 33 51.2	0.300
2	18 1 24.10	2.3100	28 34 4.8	0.154
3	18 3 42.74	2.3113	28 34 9.7	0.006
4	18 6 1.46	2.3125	28 34 5.7	0.141
5	18 8 20.24	2.3135	28 33 52.8	0.288
6	18 10 39.08	2.3145	28 33 31.2	0.434
7	18 12 57.98	2.3155	28 33 0.7	0.582
8	18 15 16.94	2.3163	28 32 21.3	0.731
9	18 17 35.94	2.3170	28 31 33.0	0.879
10	18 19 54.98	2.3177	28 30 35.8	1.028
11	18 22 14.06	2.3182	28 29 29.7	1.176
12	18 24 33.16	2.3185	28 28 14.7	1.324
13	18 26 52.28	2.3189	28 26 50.8	1.473
14	18 29 11.43	2.3192	28 25 18.0	1.621
15	18 31 30.59	2.3194	28 23 36.3	1.769
16	18 33 49.76	2.3195	28 21 45.7	1.918
17	18 36 8.93	2.3194	28 19 46.1	2.068
18	18 38 28.09	2.3192	28 17 37.7	2.214
19	18 40 47.24	2.3191	28 15 20.4	2.363
20	18 43 6.38	2.3188	28 12 54.1	2.512
21	18 45 25.50	2.3184	28 10 18.9	2.661
22	18 47 44.59	2.3179	28 7 34.8	2.809
23	18 50 3.65	2.3173	28 4 41.8	2.958
24	18 52 22.67	2.3167	S.28 1 39.9	3.106

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					**FRIDAY 15.**				
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	18 52 22.67	2.3167	S.28 1 39.9	3.106	0	20 41 29.78	2.2103	S.22 48 21.9	9.755
1	18 54 41.65	2.3160	27 58 29.1	3.254	1	20 43 42.31	2.2072	22 38 32.9	9.879
2	18 57 0.59	2.3152	27 55 9.5	3.401	2	20 45 54.65	2.2042	22 28 36.5	10.001
3	18 59 19.48	2.3143	27 51 41.0	3.549	3	20 48 6.81	2.2011	22 18 32.8	10.122
4	19 1 38.31	2.3133	27 48 3.7	3.696	4	20 50 18.78	2.1980	22 8 21.8	10.243
5	19 3 57.08	2.3122	27 44 17.5	3.843	5	20 52 30.57	2.1949	21 58 3.6	10.363
6	19 6 15.78	2.3111	27 40 22.5	3.990	6	20 54 42.17	2.1918	21 47 38.2	10.483
7	19 8 34.41	2.3099	27 36 18.7	4.137	7	20 56 53.59	2.1887	21 37 5.6	10.602
8	19 10 52.97	2.3086	27 32 6.1	4.284	8	20 59 4.82	2.1857	21 26 25.9	10.721
9	19 13 11.44	2.3072	27 27 44.7	4.430	9	21 1 15.87	2.1826	21 15 39.1	10.839
10	19 15 29.83	2.3057	27 23 14.6	4.575	10	21 3 26.73	2.1795	21 4 45.3	10.955
11	19 17 48.13	2.3042	27 18 35.7	4.721	11	21 5 37.41	2.1765	20 53 44.5	11.070
12	19 20 6.33	2.3025	27 13 48.1	4.866	12	21 7 47.91	2.1735	20 42 36.9	11.185
13	19 22 24.43	2.3008	27 8 51.8	5.011	13	21 9 58.23	2.1704	20 31 22.4	11.298
14	19 24 42.43	2.2992	27 3 46.8	5.155	14	21 12 8.36	2.1673	20 20 1.1	11.411
15	19 27 0.33	2.2974	26 58 33.2	5.299	15	21 14 18.31	2.1643	20 8 33.0	11.523
16	19 29 18.12	2.2955	26 53 11.0	5.443	16	21 16 28.08	2.1614	19 56 58.2	11.635
17	19 31 35.79	2.2935	26 47 40.1	5.587	17	21 18 37.68	2.1585	19 45 16.7	11.746
18	19 33 53.34	2.2915	26 42 0.6	5.730	18	21 20 47.10	2.1556	19 33 28.7	11.856
19	19 36 10.77	2.2894	26 36 12.5	5.872	19	21 22 56.35	2.1527	19 21 34.1	11.964
20	19 38 28.07	2.2873	26 30 16.0	6.013	20	21 25 5.43	2.1498	19 9 33.0	12.072
21	19 40 45.25	2.2852	26 24 11.0	6.154	21	21 27 14.33	2.1469	18 57 25.5	12.178
22	19 43 2.30	2.2829	26 17 57.5	6.296	22	21 29 23.06	2.1442	18 45 11.7	12.283
23	19 45 19.20	2.2805	S.26 11 35.5	6.437	23	21 31 31.63	2.1414	S.18 32 51.6	12.388
THURSDAY 14.					**SATURDAY 16.**				
0	19 47 35.96	2.2782	S.26 5 5.1	6.577	0	21 33 40.03	2.1386	S.18 20 25.1	12.493
1	19 49 52.58	2.2758	25 58 26.3	6.716	1	21 35 48.26	2.1358	18 7 52.5	12.596
2	19 52 9.06	2.2734	25 51 39.2	6.854	2	21 37 56.33	2.1332	17 55 13.6	12.698
3	19 54 25.39	2.2709	25 44 43.8	6.993	3	21 40 4.25	2.1306	17 42 28.7	12.799
4	19 56 41.57	2.2683	25 37 40.1	7.131	4	21 42 12.01	2.1280	17 29 37.7	12.900
5	19 58 57.59	2.2656	25 30 28.1	7.268	5	21 44 19.61	2.1255	17 16 40.7	13.000
6	20 1 13.44	2.2628	25 23 7.9	7.405	6	21 46 27.07	2.1231	17 3 37.7	13.099
7	20 3 29.13	2.2602	25 15 39.5	7.541	7	21 48 34.38	2.1206	16 50 28.8	13.197
8	20 5 44.67	2.2576	25 8 3.0	7.677	8	21 50 41.54	2.1181	16 37 14.1	13.293
9	20 8 0.05	2.2549	25 0 18.3	7.812	9	21 52 48.55	2.1157	16 23 53.7	13.388
10	20 10 15.26	2.2521	24 52 25.5	7.946	10	21 54 55.42	2.1133	16 10 27.6	13.482
11	20 12 30.30	2.2492	24 44 24.8	8.079	11	21 57 2.15	2.1111	15 56 55.9	13.576
12	20 14 45.17	2.2463	24 36 16.1	8.212	12	21 59 8.75	2.1089	15 43 18.5	13.669
13	20 16 59.87	2.2435	24 27 59.4	8.344	13	22 1 15.22	2.1067	15 29 35.6	13.760
14	20 19 14.39	2.2406	24 19 34.8	8.476	14	22 3 21.55	2.1045	15 15 47.3	13.851
15	20 21 28.74	2.2377	24 11 2.3	8.607	15	22 5 27.75	2.1023	15 1 53.5	13.941
16	20 23 42.92	2.2348	24 2 21.9	8.738	16	22 7 33.83	2.1003	14 47 54.4	14.030
17	20 25 56.92	2.2318	23 53 33.7	8.868	17	22 9 39.79	2.0984	14 33 50.0	14.118
18	20 28 10.73	2.2287	23 44 37.8	8.996	18	22 11 45.64	2.0966	14 19 40.3	14.205
19	20 30 24.36	2.2257	23 35 34.2	9.124	19	22 13 51.38	2.0947	14 5 25.4	14.290
20	20 32 37.81	2.2227	23 26 22.9	9.252	20	22 15 57.01	2.0928	13 51 5.4	14.375
21	20 34 51.08	2.2197	23 17 3.9	9.379	21	22 18 2.52	2.0910	13 36 40.5	14.458
22	20 37 4.17	2.2166	23 7 37.4	9.505	22	22 20 7.93	2.0894	13 22 10.6	14.540
23	20 39 17.07	2.2134	22 58 3.4	9.630	23	22 22 13.25	2.0879	13 7 35.7	14.622
24	20 41 29.78	2.2103	S.22 48 21.9	9.755	24	22 24 18.48	2.0864	S.12 52 55.9	14.703

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 24 18.48	2.0864	S.12 52 55.9	14.708
1	22 26 23.62	2.0849	12 38 11.3	14.782
2	22 28 28.67	2.0834	12 23 22.0	14.860
3	22 30 33.63	2.0821	12 8 28.1	14.938
4	22 32 38.52	2.0808	11 53 29.5	15.015
5	22 34 43.33	2.0796	11 38 26.4	15.090
6	22 36 48.07	2.0785	11 23 18.8	15.164
7	22 38 52.75	2.0774	11 8 6.8	15.237
8	22 40 57.36	2.0763	10 52 50.4	15.308
9	22 43 1.91	2.0754	10 37 29.8	15.378
10	22 45 6.41	2.0746	10 22 5.0	15.448
11	22 47 10.86	2.0738	10 6 36.0	15.418
12	22 49 15.27	2.0732	9 51 2.8	15.587
13	22 51 19.64	2.0725	9 35 25.6	15.652
14	22 53 23.97	2.0719	9 19 44.6	15.716
15	22 55 28.27	2.0715	9 3 59.7	15.780
16	22 57 32.55	2.0712	8 48 11.0	15.843
17	22 59 36.81	2.0707	8 32 18.6	15.904
18	23 1 41.04	2.0704	8 16 22.5	15.965
19	23 3 45.26	2.0703	8 0 22.8	16.024
20	23 5 49.48	2.0703	7 44 19.6	16.082
21	23 7 53.70	2.0703	7 28 13.0	16.139
22	23 9 57.92	2.0704	7 12 2.9	16.195
23	23 12 2.15	2.0705	S. 6 55 49.5	16.250

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 14 6.40	2.0709	S. 6 39 32.9	16.304
1	23 16 10.66	2.0712	6 23 13.1	16.356
2	23 18 14.94	2.0717	6 6 50.2	16.406
3	23 20 19.26	2.0723	5 50 24.4	16.454
4	23 22 23.61	2.0728	5 33 55.7	16.502
5	23 24 27.99	2.0734	5 17 24.1	16.550
6	23 26 32.41	2.0741	5 0 49.7	16.596
7	23 28 36.88	2.0750	4 44 12.6	16.640
8	23 30 41.41	2.0761	4 27 32.9	16.682
9	23 32 46.01	2.0772	4 10 50.7	16.724
10	23 34 50.67	2.0782	3 54 6.0	16.765
11	23 36 55.39	2.0794	3 37 18.9	16.804
12	23 39 0.19	2.0808	3 20 29.5	16.842
13	23 41 5.08	2.0822	3 3 37.9	16.878
14	23 43 10.05	2.0836	2 46 44.2	16.913
15	23 45 15.11	2.0852	2 29 48.4	16.946
16	23 47 20.27	2.0869	2 12 50.7	16.978
17	23 49 25.54	2.0886	1 55 51.1	17.009
18	23 51 30.91	2.0904	1 38 49.6	17.039
19	23 53 36.39	2.0924	1 21 46.4	17.066
20	23 55 42.00	2.0946	1 4 41.7	17.091
21	23 57 47.74	2.0967	0 47 35.5	17.116
22	23 59 53.61	2.0989	0 30 27.8	17.140
23	0 1 59.61	2.1011	S. 0 13 18.7	17.162
24	0 4 5.75	2.1035	N. 0 3 51.6	17.182

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 4 5.75	2.1035	N. 0 3 51.6	17.182
1	0 6 12.04	2.1061	0 21 3.1	17.201
2	0 8 18.49	2.1088	0 38 15.7	17.218
3	0 10 25.10	2.1116	0 55 29.2	17.233
4	0 12 31.88	2.1144	1 12 43.6	17.247
5	0 14 38.83	2.1172	1 29 58.8	17.260
6	0 16 45.95	2.1202	1 47 14.8	17.272
7	0 18 53.25	2.1233	2 4 31.4	17.281
8	0 21 0.75	2.1266	2 21 48.4	17.287
9	0 23 8.44	2.1298	2 39 5.8	17.293
10	0 25 16.33	2.1333	2 56 23.5	17.297
11	0 27 24.42	2.1366	3 13 41.4	17.299
12	0 29 32.72	2.1402	3 30 59.4	17.300
13	0 31 41.24	2.1439	3 48 17.4	17.299
14	0 33 49.99	2.1476	4 5 35.3	17.296
15	0 35 58.96	2.1514	4 22 53.0	17.292
16	0 38 8.16	2.1554	4 40 10.4	17.286
17	0 40 17.61	2.1594	4 57 27.4	17.278
18	0 42 27.31	2.1637	5 14 43.8	17.268
19	0 44 37.26	2.1679	5 31 59.6	17.256
20	0 46 47.46	2.1722	5 49 14.6	17.243
21	0 48 57.93	2.1767	6 6 28.8	17.228
22	0 51 8.67	2.1812	6 23 42.0	17.211
23	0 53 19.68	2.1858	N. 6 40 54.2	17.192

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 55 30.97	2.1906	N. 6 58 5.1	17.171
1	0 57 42.55	2.1954	7 15 14.7	17.148
2	0 59 54.42	2.2002	7 32 22.9	17.124
3	1 2 6.58	2.2052	7 49 29.6	17.097
4	1 4 19.04	2.2103	8 6 34.6	17.068
5	1 6 31.82	2.2156	8 23 37.8	17.036
6	1 8 44.91	2.2208	8 40 39.2	17.005
7	1 10 58.32	2.2262	8 57 38.6	16.970
8	1 13 12.05	2.2315	9 14 35.8	16.934
9	1 15 26.10	2.2369	9 31 30.7	16.895
10	1 17 40.48	2.2426	9 48 23.2	16.855
11	1 19 55.21	2.2484	10 5 13.3	16.813
12	1 22 10.29	2.2542	10 22 0.8	16.768
13	1 24 25.72	2.2600	10 38 45.5	16.721
14	1 26 41.49	2.2658	10 55 27.3	16.672
15	1 28 57.62	2.2719	11 12 6.1	16.621
16	1 31 14.12	2.2781	11 28 41.8	16.567
17	1 33 30.99	2.2843	11 45 14.2	16.512
18	1 35 48.24	2.2907	12 1 43.3	16.456
19	1 38 5.87	2.2969	12 18 8.9	16.396
20	1 40 23.87	2.3032	12 34 30.8	16.332
21	1 42 42.26	2.3097	12 50 48.8	16.267
22	1 45 1.04	2.3162	13 7 2.9	16.201
23	1 47 20.21	2.3229	13 23 13.0	16.134
24	1 49 39.79	2.3297	N.13 39 19.0	16.064

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 49 39.79	2.3297	N.13 39 19.0	16.064
1	1 51 59.77	2.3364	13 55 20.6	15.990
2	1 54 20.16	2.3432	14 11 17.7	15.914
3	1 56 40.95	2.3500	14 27 10.3	15.837
4	1 59 2.16	2.3570	14 42 58.2	15.757
5	2 1 23.79	2.3641	14 58 41.2	15.674
6	2 3 45.85	2.3712	15 14 19.1	15.589
7	2 6 8.33	2.3782	15 29 51.9	15.503
8	2 8 31.24	2.3853	15 45 19.5	15.415
9	2 10 54.57	2.3924	16 0 41.7	15.324
10	2 13 18.33	2.3997	16 15 58.3	15.230
11	2 15 42.54	2.4072	16 31 9.2	15.133
12	2 18 7.19	2.4145	16 46 14.2	15.033
13	2 20 32.28	2.4218	17 1 13.2	14.933
14	2 22 57.81	2.4292	17 16 6.2	14.831
15	2 25 23.78	2.4366	17 30 52.9	14.726
16	2 27 50.20	2.4442	17 45 33.2	14.617
17	2 30 17.08	2.4517	18 0 7.0	14.507
18	2 32 44.40	2.4592	18 14 34.1	14.395
19	2 35 12.17	2.4667	18 28 54.4	14.280
20	2 37 40.40	2.4742	18 43 7.7	14.162
21	2 40 9.08	2.4818	18 57 13.9	14.042
22	2 42 38.22	2.4894	19 11 12.8	13.920
23	2 45 7.81	2.4969	N.19 25 4.3	13.796

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 47 37.85	2.5046	N.19 38 48.4	13.671
1	2 50 8.35	2.5121	19 52 24.8	13.542
2	2 52 39.30	2.5197	20 5 53.4	13.409
3	2 55 10.71	2.5272	20 19 13.9	13.275
4	2 57 42.57	2.5347	20 32 26.4	13.140
5	3 0 14.88	2.5422	20 45 30.7	13.002
6	3 2 47.64	2.5497	20 58 26.6	12.861
7	3 5 20.85	2.5572	21 11 14.0	12.718
8	3 7 54.51	2.5647	21 23 52.8	12.573
9	3 10 28.61	2.5721	21 36 22.8	12.426
10	3 13 3.16	2.5795	21 48 43.9	12.277
11	3 15 38.15	2.5867	22 0 56.0	12.125
12	3 18 13.57	2.5940	22 12 58.8	11.970
13	3 20 49.43	2.6013	22 24 52.3	11.814
14	3 23 25.72	2.6085	22 36 36.4	11.656
15	3 26 2.47	2.6157	22 48 11.0	11.496
16	3 28 39.63	2.6227	22 59 35.9	11.333
17	3 31 17.20	2.6297	23 10 51.0	11.168
18	3 33 55.19	2.6366	23 21 56.1	11.001
19	3 36 33.59	2.6434	23 32 51.1	10.832
20	3 39 12.40	2.6502	23 43 36.0	10.662
21	3 41 51.61	2.6568	23 54 10.6	10.490
22	3 44 31.22	2.6634	24 4 34.8	10.314
23	3 47 11.22	2.6698	24 14 48.3	10.136
24	3 49 51.59	2.6760	N.24 24 51.1	9.957

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 49 51.59	2.6760	N.24 24 51.1	9.957
1	3 52 32.34	2.6823	24 34 43.2	9.777
2	3 55 13.47	2.6886	24 44 24.4	9.596
3	3 57 54.97	2.6946	24 53 54.7	9.412
4	4 0 36.82	2.7004	25 3 13.9	9.226
5	4 3 19.02	2.7061	25 12 21.8	9.038
6	4 6 1.55	2.7116	25 21 18.4	8.848
7	4 8 44.41	2.7171	25 30 3.6	8.657
8	4 11 27.60	2.7226	25 38 37.3	8.465
9	4 14 11.12	2.7279	25 46 59.4	8.271
10	4 16 54.95	2.7328	25 55 9.8	8.075
11	4 19 39.06	2.7375	26 3 8.5	7.879
12	4 22 23.45	2.7422	26 10 55.3	7.681
13	4 25 8.12	2.7468	26 18 30.2	7.481
14	4 27 53.07	2.7513	26 25 53.0	7.279
15	4 30 38.28	2.7556	26 33 3.7	7.076
16	4 33 23.74	2.7596	26 40 2.2	6.873
17	4 36 9.43	2.7633	26 46 48.5	6.668
18	4 38 55.33	2.7668	26 53 22.4	6.462
19	4 41 41.45	2.7704	26 59 43.9	6.255
20	4 44 27.78	2.7737	27 5 53.0	6.047
21	4 47 14.30	2.7768	27 11 49.6	5.838
22	4 50 1.00	2.7796	27 17 33.6	5.628
23	4 52 47.86	2.7822	N.27 23 5.0	5.418

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 55 34.87	2.7847	N.27 28 23.8	5.207
1	4 58 22.02	2.7870	27 33 29.9	4.994
2	5 1 9.31	2.7892	27 38 23.1	4.780
3	5 3 56.72	2.7910	27 43 3.5	4.566
4	5 6 44.23	2.7926	27 47 31.1	4.352
5	5 9 31.83	2.7939	27 51 45.8	4.138
6	5 12 19.50	2.7951	27 55 47.7	3.924
7	5 15 7.24	2.7961	27 59 36.7	3.708
8	5 17 55.03	2.7968	28 3 12.7	3.492
9	5 20 42.86	2.7973	28 6 35.8	3.276
10	5 23 30.71	2.7976	28 9 45.9	3.060
11	5 26 18.57	2.7978	28 12 43.0	2.844
12	5 29 6.44	2.7977	28 15 27.2	2.628
13	5 31 54.29	2.7972	28 17 58.4	2.411
14	5 34 42.10	2.7965	28 20 16.6	2.195
15	5 37 29.87	2.7957	28 22 21.8	1.979
16	5 40 17.58	2.7946	28 24 14.1	1.763
17	5 43 5.22	2.7933	28 25 53.4	1.547
18	5 45 52.78	2.7918	28 27 19.8	1.332
19	5 48 40.24	2.7900	28 28 33.3	1.117
20	5 51 27.58	2.7879	28 29 33.9	0.901
21	5 54 14.78	2.7857	28 30 21.5	0.686
22	5 57 1.86	2.7832	28 30 56.3	0.473
23	5 59 48.78	2.7806	28 31 18.3	0.260
24	6 2 35.54	2.7778	N.28 31 27.5	0.047

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 2 35.54	2.7778	N.28 31 27.5	0.047
1	6 5 22.12	2.7748	28 31 23.9	0.166
2	6 8 8.51	2.7717	28 31 7.6	0.376
3	6 10 54.69	2.7682	28 30 38.8	0.585
4	6 13 40.66	2.7645	28 29 57.4	0.795
5	6 16 26.41	2.7604	28 29 3.4	1.004
6	6 19 11.91	2.7561	28 27 56.9	1.212
7	6 21 57.15	2.7518	28 26 38.0	1.419
8	6 24 42.13	2.7473	28 25 6.7	1.625
9	6 27 26.83	2.7426	28 23 23.1	1.830
10	6 30 11.24	2.7376	28 21 27.2	2.033
11	6 32 55.34	2.7322	28 19 19.2	2.234
12	6 35 39.11	2.7269	28 16 59.1	2.435
13	6 38 22.56	2.7214	28 14 27.0	2.635
14	6 41 5.68	2.7158	28 11 42.9	2.834
15	6 43 48.46	2.7100	28 8 46.9	3.032
16	6 46 30.88	2.7039	28 5 39.1	3.228
17	6 49 12.93	2.6978	28 2 19.6	3.421
18	6 51 54.61	2.6915	27 58 48.6	3.613
19	6 54 35.90	2.6849	27 55 6.1	3.804
20	6 57 16.79	2.6781	27 51 12.1	3.996
21	6 59 57.28	2.6712	27 47 6.6	4.185
22	7 2 37.35	2.6642	27 42 49.9	4.371
23	7 5 17.00	2.6571	N.27 38 22.1	4.555

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 7 56.21	2.6498	N.27 33 43.3	4.738
1	7 10 34.98	2.6425	27 28 53.6	4.920
2	7 13 13.31	2.6350	27 23 52.9	5.101
3	7 15 51.18	2.6273	27 18 41.4	5.280
4	7 18 28.59	2.6196	27 13 19.3	5.456
5	7 21 5.53	2.6117	27 7 46.7	5.629
6	7 23 41.99	2.6037	27 2 3.8	5.801
7	7 26 17.97	2.5956	26 56 10.6	5.972
8	7 28 53.46	2.5874	26 50 7.1	6.143
9	7 31 28.46	2.5791	26 43 53.4	6.312
10	7 34 2.96	2.5708	26 37 29.7	6.477
11	7 36 36.96	2.5623	26 30 56.2	6.639
12	7 39 10.44	2.5538	26 24 13.0	6.801
13	7 41 43.41	2.5452	26 17 20.1	6.961
14	7 44 15.86	2.5364	26 10 17.7	7.119
15	7 46 47.78	2.5276	26 3 5.8	7.275
16	7 49 19.17	2.5188	25 55 44.6	7.429
17	7 51 50.04	2.5100	25 48 14.3	7.580
18	7 54 20.37	2.5011	25 40 35.0	7.730
19	7 56 50.17	2.4921	25 32 46.7	7.879
20	7 59 19.42	2.4830	25 24 49.5	8.026
21	8 1 48.13	2.4740	25 16 43.6	8.170
22	8 4 16.30	2.4649	25 8 29.1	8.312
23	8 6 43.92	2.4558	25 0 6.1	8.453
24	8 9 10.99	2.4466	N.24 51 34.7	8.592

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 9 10.99	2.4466	N.24 51 34.7	8.592
1	8 11 37.51	2.4374	24 42 55.1	8.728
2	8 14 3.48	2.4283	24 34 7.4	8.863
3	8 16 28.90	2.4191	24 25 11.6	8.996
4	8 18 53.77	2.4099	24 16 7.9	9.126
5	8 21 18.09	2.4006	24 6 56.5	9.253
6	8 23 41.85	2.3914	23 57 37.6	9.379
7	8 26 5.06	2.3821	23 48 11.1	9.504
8	8 28 27.71	2.3729	23 38 37.1	9.627
9	8 30 49.81	2.3636	23 28 55.8	9.748
10	8 33 11.35	2.3544	23 19 7.3	9.868
11	8 35 32.33	2.3452	23 9 11.7	9.985
12	8 37 52.77	2.3361	22 59 9.1	10.099
13	8 40 12.66	2.3269	22 48 59.7	10.213
14	8 42 31.99	2.3176	22 38 43.6	10.324
15	8 44 50.77	2.3085	22 28 20.8	10.434
16	8 47 9.01	2.2996	22 17 51.5	10.542
17	8 49 26.72	2.2907	22 7 15.8	10.647
18	8 51 43.89	2.2817	21 56 33.9	10.750
19	8 54 0.52	2.2727	21 45 45.8	10.852
20	8 56 16.61	2.2637	21 34 51.6	10.953
21	8 58 32.16	2.2548	21 23 51.4	11.052
22	9 0 47.18	2.2459	21 12 45.4	11.149
23	9 3 1.67	2.2371	N.21 1 33.6	11.245

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 5 15.63	2.2283	N.20 50 16.1	11.338
1	9 7 29.07	2.2196	20 38 53.1	11.428
2	9 9 41.99	2.2110	20 27 24.7	11.517
3	9 11 54.39	2.2024	20 15 51.0	11.605
4	9 14 6.27	2.1939	20 4 12.1	11.691
5	9 16 17.65	2.1854	19 52 28.1	11.776
6	9 18 28.52	2.1770	19 40 39.0	11.859
7	9 20 38.89	2.1687	19 28 45.0	11.940
8	9 22 48.76	2.1604	19 16 46.2	12.020
9	9 24 58.13	2.1521	19 4 42.6	12.098
10	9 27 7.01	2.1439	18 52 34.4	12.175
11	9 29 15.40	2.1358	18 40 21.6	12.250
12	9 31 23.31	2.1278	18 28 4.4	12.323
13	9 33 30.74	2.1199	18 15 42.8	12.396
14	9 35 37.70	2.1120	18 3 17.0	12.465
15	9 37 44.18	2.1042	17 50 47.0	12.534
16	9 39 50.20	2.0965	17 38 12.9	12.601
17	9 41 55.77	2.0890	17 25 34.9	12.666
18	9 44 0.88	2.0814	17 12 53.0	12.730
19	9 46 5.54	2.0739	17 0 7.3	12.793
20	9 48 9.75	2.0665	16 47 17.8	12.855
21	9 50 13.52	2.0592	16 34 24.7	12.915
22	9 52 16.85	2.0520	16 21 28.0	12.974
23	9 54 19.75	2.0448	16 8 27.8	13.031
24	9 56 22.22	2.0377	N.15 55 24.3	13.086

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension. h. m. s.	Diff. for 1 m. s.	Declination. ° ′ ″	Diff. for 1 m. ″
0	9 56 22.22	2.0377	N.15 55 24.3	13.086
1	9 58 24.27	2.0307	15 42 17.5	13.141
2	10 0 25.90	2.0239	15 29 7.4	13.194
3	10 2 27.13	2.0171	15 15 54.2	13.245
4	10 4 27.95	2.0103	15 2 38.0	13.295
5	10 6 28.36	2.0036	14 49 18.8	13.345
6	10 8 28.37	1.9970	14 35 56.6	13.393
7	10 10 27.99	1.9905	14 22 31.6	13.439
8	10 12 27.23	1.9842	14 9 3.9	13.484
9	10 14 26.10	1.9780	13 55 33.5	13.528
10	10 16 24.59	1.9718	13 42 0.5	13.571
11	10 18 22.71	1.9656	13 28 24.9	13.614
12	10 20 20.46	1.9595	13 14 46.8	13.655
13	10 22 17.85	1.9536	13 1 6.3	13.694
14	10 24 14.89	1.9478	12 47 23.5	13.732
15	10 26 11.58	1.9420	12 33 38.5	13.769
16	10 28 7.93	1.9363	12 19 51.3	13.805
17	10 30 3.94	1.9307	12 6 2.0	13.840
18	10 31 59.62	1.9252	11 52 10.6	13.873
19	10 33 54.97	1.9198	11 38 17.3	13.905
20	10 35 50.00	1.9145	11 24 22.0	13.937
21	10 37 44.71	1.9093	11 10 24.8	13.968
22	10 39 39.11	1.9042	10 56 25.8	13.998
23	10 41 33.21	1.8992	N.10 42 25.1	14.026

SATURDAY 30.

Hour.	Right Ascension. h. m. s.	Diff. for 1 m. s.	Declination. ° ′ ″	Diff. for 1 m. ″
0	10 43 27.01	1.8932	N.10 28 22.7	14.053
1	10 45 20.52	1.8893	10 14 18.7	14.080
2	10 47 13.74	1.8846	10 0 13.1	14.105
3	10 49 6.67	1.8800	9 46 6.1	14.129
4	10 50 59.32	1.8755	9 31 57.5	14.152
5	10 52 51.71	1.8709	9 17 47.7	14.174
6	10 54 43.83	1.8666	9 3 36.7	14.196
7	10 56 35.69	1.8622	8 49 24.3	14.217
8	10 58 27.29	1.8579	8 35 10.7	14.236
9	11 0 18.63	1.8537	8 20 56.0	14.255
10	11 2 9.73	1.8497	8 6 40.1	14.273
11	11 4 0.59	1.8457	7 52 23.2	14.290
12	11 5 51.22	1.8419	7 38 5.3	14.306
13	11 7 41.62	1.8382	7 23 46.4	14.321
14	11 9 31.80	1.8345	7 9 26.7	14.335
15	11 11 21.75	1.8308	6 55 6.2	14.348
16	11 13 11.49	1.8272	6 40 45.0	14.360
17	11 15 1.02	1.8239	6 26 23.0	14.372
18	11 16 50.36	1.8206	6 12 0.4	14.382
19	11 18 39.50	1.8173	5 57 37.2	14.392
20	11 20 28.44	1.8142	5 43 13.4	14.401
21	11 22 17.20	1.8112	5 28 49.0	14.410
22	11 24 5.78	1.8082	5 14 24.2	14.418
23	11 25 54.18	1.8053	4 59 58.9	14.425
24	11 27 42.41	1.8024	N. 4 45 33.2	14.431

SUNDAY 31.

Hour.	Right Ascension. h. m. s.	Diff. for 1 m. s.	Declination. ° ′ ″	Diff. for 1 m. ″
0	11 27 42.41	1.8024	N. 4 45 33.2	14.431
1	11 29 30.47	1.7997	4 31 7.2	14.436
2	11 31 18.37	1.7971	4 16 40.9	14.440
3	11 33 6.12	1.7946	4 2 14.4	14.443
4	11 34 53.72	1.7921	3 47 47.7	14.446
5	11 36 41.17	1.7897	3 33 20.9	14.447
6	11 38 28.48	1.7874	3 18 54.0	14.448
7	11 40 15.65	1.7852	3 4 27.1	14.449
8	11 42 2.70	1.7832	2 50 0.1	14.450
9	11 43 49.63	1.7812	2 35 33.1	14.449
10	11 45 36.44	1.7792	2 21 6.2	14.447
11	11 47 23.13	1.7773	2 6 39.4	14.444
12	11 49 9.71	1.7754	1 52 12.9	14.440
13	11 50 56.18	1.7737	1 37 46.6	14.437
14	11 52 42.56	1.7722	1 23 20.5	14.432
15	11 54 28.85	1.7707	1 8 54.7	14.426
16	11 56 15.05	1.7692	0 54 29.3	14.420
17	11 58 1.16	1.7678	0 40 4.2	14.414
18	11 59 47.19	1.7666	0 25 39.6	14.406
19	12 1 33.15	1.7654	N. 0 11 15.5	14.398
20	12 3 19.04	1.7643	S. 0 3 8.1	14.389
21	12 5 4.86	1.7632	0 17 31.2	14.380
22	12 6 50.62	1.7623	0 31 53.7	14.370
23	12 8 36.33	1.7614	S. 0 46 15.6	14.359

MONDAY, JUNE 1.

Hour.	Right Ascension. h. m. s.	Diff. for 1 m. s.	Declination. ° ′ ″	Diff. for 1 m. ″
0	12 10 21.99	1.7606	S. 1 0 36.7	14.346

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, . .	8	14	10.8
☾ Last Quarter, . .	16	11	10.4
● New Moon, . .	23	2	47.7
☽ First Quarter, .	30	1	12.0

	Day.	h.
☾ Apogee, ...	7	15.8
☾ Perigee, ...	22	8.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	95 48 30	3081	97 17 3	3097	98 45 16	3113	100 13 10	3129
	Aldebaran	W.	69 36 46	2810	71 11 1	2824	72 44 58	2837	74 18 38	2849
	Saturn	W.	37 17 22	2818	38 51 27	2828	40 25 18	2840	41 58 54	2851
	Pollux	W.	25 38 22	2743	27 14 5	2756	28 49 30	2770	30 24 37	2783
	Spica	E.	65 14 21	2734	63 38 26	2749	62 2 51	2763	60 27 35	2778
	Antares	E.	111 8 16	2734	109 32 21	2749	107 56 46	2763	106 21 30	2777
2	Sun	W.	107 28 9	3199	108 54 19	3212	110 20 14	3225	111 45 54	3237
	Aldebaran	W.	82 3 0	2909	83 35 7	2921	85 6 59	2933	86 38 36	2943
	Saturn	W.	49 43 20	2906	51 15 31	2916	52 47 29	2927	54 19 14	2937
	Pollux	W.	38 15 58	2845	39 49 27	2858	41 22 41	2869	42 55 39	2880
	Spica	E.	52 35 39	2842	51 2 5	2853	49 28 46	2866	47 55 43	2876
	Antares	E.	98 29 31	2842	96 55 57	2853	95 22 38	2865	93 49 34	2876
3	Sun	W.	118 50 42	3294	120 15 1	3304	121 39 8	3313	123 3 4	3324
	Aldebaran	W.	94 13 23	2994	95 43 43	3004	97 13 51	3013	98 43 48	3022
	Saturn	W.	61 54 51	2984	63 25 24	2993	64 55 46	3001	66 25 58	3009
	Pollux	W.	50 37 11	2929	52 8 53	2939	53 40 23	2946	55 11 43	2956
	Spica	E.	40 13 51	2927	38 42 7	2936	37 10 34	2945	35 39 12	2954
	Antares	E.	86 7 39	2927	84 35 54	2935	83 4 20	2944	81 32 57	2953
4	Aldebaran	W.	106 10 49	3064	107 39 43	3071	109 8 28	3078	110 37 4	3087
	Saturn	W.	73 54 36	3045	75 23 53	3050	76 53 4	3056	78 22 7	3063
	Pollux	W.	62 45 50	2992	64 16 13	2999	65 46 27	3006	67 16 34	3010
	Regulus	W.	26 5 59	3014	27 35 54	3018	29 5 44	3022	30 35 29	3027
	Antares	E.	73 58 36	2990	72 28 11	2997	70 57 54	3003	69 27 44	3009
	a Aquilæ	E.	120 4 33	4148	118 55 18	4121	117 45 37	4096	116 35 32	4073
5	Saturn	W.	85 45 42	3087	87 14 7	3091	88 42 28	3095	90 10 44	3098
	Pollux	W.	74 45 28	3035	76 14 57	3039	77 44 22	3043	79 13 42	3047
	Regulus	W.	38 2 59	3046	39 32 15	3049	41 1 27	3053	42 30 35	3056
	Antares	E.	61 58 37	3033	60 29 5	3038	58 59 39	3041	57 30 17	3045
	a Aquilæ	E.	110 40 6	3985	109 28 12	3971	108 16 4	3959	107 3 44	3948
6	Saturn	W.	97 31 4	3113	98 58 58	3116	100 26 48	3118	101 54 36	3119
	Pollux	W.	86 39 20	3061	88 8 17	3063	89 37 12	3065	91 6 5	3066
	Regulus	W.	49 55 27	3067	51 24 17	3069	52 53 6	3070	54 21 52	3072
	Antares	E.	50 4 26	3059	48 35 26	3061	47 6 29	3063	45 37 34	3064
	a Aquilæ	E.	100 59 35	3908	99 46 23	3902	98 33 5	3897	97 19 41	3893
7	Saturn	W.	109 13 7	3126	110 40 45	3127	112 8 21	3128	113 35 56	3129
	Pollux	W.	98 30 6	3071	99 58 51	3072	101 27 35	3072	102 56 19	3073
	Regulus	W.	61 45 21	3076	63 14 1	3076	64 42 40	3076	66 11 19	3076
	Antares	E.	38 13 22	3069	36 44 35	3069	35 15 48	3070	33 47 2	3070
	a Aquilæ	E.	91 12 0	3884	89 58 24	3885	88 44 48	3885	87 31 13	3887
	Fomalhaut	E.	118 59 59	3361	117 36 58	3353	116 13 48	3347	114 50 31	3340
8	Saturn	W.	120 53 46	3130	122 21 19	3129	123 48 53	3129	125 16 27	3129
	Pollux	W.	110 20 0	3070	111 48 47	3069	113 17 34	3068	114 46 23	3066
	Regulus	W.	73 34 40	3073	75 3 23	3072	76 32 7	3070	78 0 53	3069
	Spica	W.	19 31 29	3070	21 0 15	3069	22 29 3	3067	23 57 53	3065
	a Aquilæ	E.	81 24 2	3907	80 10 49	3914	78 57 43	3921	77 44 45	3929
	Fomalhaut	E.	107 52 20	3313	106 28 23	3308	105 4 21	3304	103 40 14	3300
9	Regulus	W.	85 25 11	3060	86 54 10	3057	88 23 12	3054	89 52 17	3052

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	101 40 45	3143	103 8 2	3158	104 35 1	3173	106 1 43	3186
	Aldebaran	W.	75 52 2	2862	77 25 10	2874	78 58 2	2886	80 30 39	2898
	Saturn	W.	43 32 16	2862	45 5 23	2878	46 38 16	2884	48 10 55	2896
	Pollux	W.	31 59 27	2796	33 34 0	2810	35 8 15	2823	36 42 14	2834
	Spica	E.	58 52 38	2791	57 17 58	2804	55 43 35	2817	54 9 29	2829
	Antares	E.	104 46 32	2790	103 11 51	2804	101 37 28	2816	100 3 21	2829
2	Sun	W.	113 11 19	3249	114 36 30	3261	116 1 27	3272	117 26 11	3283
	Aldebaran	W.	88 10 0	2954	89 41 10	2965	91 12 7	2975	92 42 51	2985
	Saturn	W.	55 50 46	2947	57 22 5	2957	58 53 12	2966	60 24 7	2975
	Pollux	W.	44 28 24	2891	46 0 55	2901	47 33 13	2911	49 5 18	2920
	Spica	E.	46 22 54	2887	44 50 19	2898	43 17 57	2908	41 45 48	2917
	Antares	E.	92 16 44	2887	90 44 8	2898	89 11 46	2907	87 39 36	2917
3	Sun	W.	124 26 48	3333	125 50 21	3341	127 13 45	3350	128 36 59	3358
	Aldebaran	W.	100 13 33	3030	101 43 8	3039	103 12 32	3048	104 41 45	3056
	Saturn	W.	67 56 0	3016	69 25 53	3024	70 55 36	3030	72 25 12	3039
	Pollux	W.	56 42 52	2963	58 13 51	2971	59 44 40	2979	61 15 19	2986
	Spica	E.	34 8 1	2962	32 37 0	2969	31 6 9	2977	29 35 28	2985
	Antares	E.	80 1 46	2961	78 30 45	2969	76 59 53	2976	75 29 10	2983
4	Aldebaran	W.	112 5 30	3093	113 33 48	3101	115 1 57	3107	116 29 58	3114
	Saturn	W.	79 51 2	3068	81 19 51	3073	82 48 34	3078	84 17 11	3082
	Pollux	W.	68 46 34	3016	70 16 27	3022	71 46 13	3026	73 15 53	3030
	Regulus	W.	32 5 9	3031	33 34 44	3035	35 4 14	3039	36 33 39	3043
	Antares	E.	67 57 41	3014	66 27 46	3019	64 57 57	3024	63 28 14	3029
	α Aquilæ	E.	115 25 4	4058	114 14 16	4034	113 3 10	4016	111 51 46	4000
5	Saturn	W.	91 38 56	3101	93 7 4	3105	94 35 7	3108	96 3 7	3110
	Pollux	W.	80 42 57	3050	82 12 8	3052	83 41 16	3056	85 10 20	3059
	Regulus	W.	43 59 40	3058	45 28 41	3060	46 57 40	3063	48 26 35	3065
	Antares	E.	56 1 0	3048	54 31 46	3051	53 2 37	3054	51 33 30	3056
	α Aquilæ	E.	105 51 12	3938	104 38 30	3929	103 25 39	3921	102 12 41	3914
6	Saturn	W.	103 22 22	3121	104 50 6	3123	106 17 48	3124	107 45 28	3125
	Pollux	W.	92 34 57	3067	94 3 47	3069	95 32 35	3070	97 1 21	3071
	Regulus	W.	55 50 36	3073	57 19 19	3074	58 48 0	3074	60 16 41	3075
	Antares	E.	44 8 41	3065	42 39 49	3067	41 10 59	3068	39 42 10	3069
	α Aquilæ	E.	96 6 14	3889	94 52 43	3887	93 39 10	3886	92 25 36	3884
7	Saturn	W.	115 3 31	3129	116 31 5	3129	117 58 39	3129	119 26 13	3130
	Pollux	W.	104 25 2	3072	105 53 46	3072	107 22 30	3071	108 51 15	3071
	Regulus	W.	67 39 58	3076	69 8 37	3075	70 37 17	3074	72 5 58	3073
	Antares	E.	32 18 16	3070	30 49 30	3070	29 20 44	3069	27 51 56	3069
	α Aquilæ	E.	86 17 40	3890	85 4 10	3893	83 50 43	3897	82 37 20	3902
	Fomalhaut	E.	113 27 6	3334	112 3 34	3329	110 39 56	3323	109 16 11	3318
8	Saturn	W.	126 44 1	3129	128 11 35	3129	129 39 10	3128	131 6 46	3128
	Pollux	W.	116 15 14	3065	117 44 6	3063	119 13 1	3062	120 41 57	3060
	Regulus	W.	79 29 41	3067	80 58 30	3066	82 27 21	3063	83 56 15	3062
	Spica	W.	25 26 45	3064	26 55 39	3062	28 24 35	3060	29 53 34	3058
	α Aquilæ	E.	76 31 55	3938	75 19 14	3948	74 6 44	3960	72 54 25	3972
	Fomalhaut	E.	102 16 2	3295	100 51 45	3291	99 27 23	3288	98 2 57	3284
9	Regulus	W.	91 21 25	3049	92 50 36	3046	94 19 52	3043	95 49 12	3040

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Spica	W.	31 22 35	3056	32 51 39	3053	34 20 47	3051	35 49 57	3048
	α Aquilæ	E.	71 42 19	3986	70 30 26	4001	69 18 47	4018	68 7 25	4036
	Fomalhaut	E.	96 38 27	3282	95 13 54	3277	93 49 16	3274	92 24 34	3270
	α Pegasi	E.	117 53 27	3424	116 31 38	3412	115 9 35	3400	113 47 18	3390
10	Regulus	W.	97 18 35	3037	98 48 2	3032	100 17 35	3029	101 47 12	3025
	Spica	W.	43 16 40	3032	44 46 13	3028	46 15 51	3025	47 45 33	3021
	α Aquilæ	E.	62 15 28	4161	61 6 15	4179	59 57 29	4212	58 49 14	4246
	Fomalhaut	E.	85 20 12	3257	83 55 10	3254	82 30 5	3253	81 4 58	3250
	α Pegasi	E.	106 53 6	3344	105 29 45	3335	104 6 14	3327	102 42 34	3319
11	Regulus	W.	109 16 36	3002	110 46 46	2997	112 17 3	2992	113 47 26	2986
	Spica	W.	55 15 27	2997	56 45 43	2992	58 16 6	2986	59 46 36	2981
	α Aquilæ	E.	53 16 56	4468	52 12 36	4526	51 9 7	4588	50 6 32	4656
	Fomalhaut	E.	73 58 48	3242	72 33 29	3241	71 8 8	3240	69 42 46	3240
	α Pegasi	E.	95 42 7	3285	94 17 38	3278	92 53 1	3272	91 28 17	3266
12	Spica	W.	67 20 54	2950	68 52 10	2942	70 23 35	2935	71 55 9	2928
	Antares	W.	21 26 41	2949	22 57 58	2942	24 29 23	2935	26 0 57	2927
	Fomalhaut	E.	62 35 55	3242	61 10 35	3243	59 45 17	3247	58 20 3	3249
	α Pegasi	E.	84 22 55	3238	82 57 31	3233	81 32 1	3229	80 6 26	3224
	Jupiter	E.	119 52 7	3041	118 22 45	3034	116 53 14	3026	115 23 33	3018
13	Spica	W.	79 35 25	2887	81 8 0	2878	82 40 47	2869	84 13 46	2859
	Antares	W.	33 41 15	2887	35 13 50	2878	36 46 37	2869	38 19 36	2859
	Fomalhaut	E.	51 15 2	3278	49 50 25	3287	48 25 58	3298	47 1 44	3311
	α Pegasi	E.	72 57 10	3204	71 31 5	3200	70 4 56	3197	68 38 43	3195
	Jupiter	E.	107 52 40	2976	106 21 57	2967	104 51 3	2958	103 19 57	2947
	Sun	E.	130 50 38	3255	129 25 34	3245	128 0 18	3235	126 34 50	3224
14	Spica	W.	92 1 47	2808	93 36 4	2798	95 10 35	2786	96 45 21	2775
	Antares	W.	46 7 39	2808	47 41 56	2798	49 16 27	2786	50 51 13	2774
	Fomalhaut	E.	40 5 12	3415	38 43 12	3447	37 21 49	3484	36 1 7	3529
	α Pegasi	E.	61 27 10	3191	60 0 50	3193	58 34 32	3194	57 8 16	3197
	Jupiter	E.	95 41 15	2895	94 8 50	2883	92 36 10	2872	91 3 15	2861
	Sun	E.	119 24 13	3167	117 57 24	3155	116 30 21	3143	115 3 3	3130
15	Spica	W.	104 43 7	2713	106 19 30	2699	107 56 11	2686	109 33 10	2673
	Antares	W.	58 49 1	2713	60 25 24	2699	62 2 5	2686	63 39 4	2672
	α Pegasi	E.	49 58 24	3235	48 32 56	3249	47 7 45	3265	45 42 52	3284
	Jupiter	E.	83 14 48	2798	81 40 17	2784	80 5 28	2770	78 30 21	2757
	Sun	E.	107 42 30	3061	106 13 33	3047	104 44 19	3033	103 14 47	3018
16	Antares	W.	71 48 42	2600	73 27 37	2585	75 6 52	2570	76 46 28	2555
	Jupiter	E.	70 30 9	2685	68 53 9	2669	67 15 47	2654	65 38 5	2639
	Sun	E.	95 42 23	2941	94 10 56	2924	92 39 7	2907	91 6 57	2892
17	Antares	W.	85 9 50	2476	86 51 37	2460	88 33 46	2443	90 16 19	2427
	α Aquilæ	W.	45 13 16	4506	46 17 3	4375	47 22 47	4253	48 30 23	4142
	Jupiter	E.	57 24 20	2560	55 44 30	2543	54 4 17	2527	52 23 42	2512
	Sun	E.	83 20 53	2807	81 46 34	2790	80 11 52	2772	78 36 48	2755
18	Antares	W.	98 54 52	2346	100 39 45	2330	102 25 1	2313	104 10 41	2297
	α Aquilæ	W.	54 33 5	3693	55 49 59	3621	57 8 11	3555	58 27 35	3491
	Jupiter	E.	43 55 15	2433	42 12 27	2417	40 29 16	2402	38 45 44	2387

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Spica	W.	37 19 10	3046	38 48 27	3043	40 17 47	3039	41 47 11	3035
	a Aquilæ	E.	66 56 21	4054	65 45 35	4075	64 35 9	4099	63 25 6	4125
	Fomalhaut	E.	90 59 48	3268	89 34 59	3265	88 10 7	3262	86 45 11	3259
	a Pegasi	E.	112 24 50	3379	111 2 10	3370	109 39 19	3361	108 16 18	3351
10	Regulus	W.	103 16 54	3021	104 46 41	3016	106 16 34	3012	107 46 32	3007
	Spica	W.	49 15 20	3016	50 45 13	3011	52 15 12	3006	53 45 17	3002
	a Aquilæ	E.	57 41 31	4282	56 34 22	4323	55 27 51	4369	54 22 2	4417
	Fomalhaut	E.	79 39 48	3248	78 14 36	3247	76 49 22	3245	75 24 6	3243
	a Pegasi	E.	101 18 45	3313	99 54 48	3306	98 30 43	3298	97 6 29	3291
11	Regulus	W.	115 17 56	2981	116 48 33	2975	118 19 17	2969	119 50 9	2962
	Spica	W.	61 17 12	2975	62 47 56	2969	64 18 47	2963	65 49 46	2956
	a Aquilæ	E.	49 4 57	4730	48 4 23	4812	47 4 57	4903	46 6 45	5000
	Fomalhaut	E.	68 17 24	3239	66 52 1	3239	65 26 38	3240	64 1 16	3241
	a Pegasi	E.	90 3 26	3260	88 38 28	3255	87 13 24	3249	85 48 13	3243
12	Spica	W.	73 26 52	2920	74 58 45	2912	76 30 48	2905	78 3 1	2896
	Antares	W.	27 32 41	2920	29 4 35	2912	30 36 38	2905	32 8 51	2896
	Fomalhaut	E.	56 54 52	3253	55 29 45	3258	54 4 44	3263	52 39 49	3270
	a Pegasi	E.	78 40 45	3220	77 14 59	3214	75 49 7	3211	74 23 11	3207
	Jupiter	E.	113 53 43	3010	112 23 43	3002	110 53 33	2993	109 23 12	2985
13	Spica	W.	85 46 57	2850	87 20 20	2840	88 53 56	2830	90 27 45	2820
	Antares	W.	39 52 47	2850	41 26 10	2840	42 59 46	2829	44 33 36	2819
	Fomalhaut	E.	45 37 45	3325	44 14 3	3344	42 50 42	3364	41 27 44	3386
	a Pegasi	E.	67 12 28	3193	65 46 10	3192	64 19 51	3191	62 53 31	3190
	Jupiter	E.	101 48 38	2938	100 17 7	2927	98 45 23	2917	97 13 26	2906
	SUN	E.	125 9 9	3213	123 43 15	3202	122 17 8	3191	120 50 48	3178
14	Spica	W.	98 20 22	2763	99 55 39	2750	101 31 12	2738	103 7 1	2725
	Antares	W.	52 26 15	2762	54 1 33	2750	55 37 6	2738	57 12 55	2725
	Fomalhaut	E.	34 41 15	3580	33 22 19	3639	32 4 27	3709	30 47 49	3797
	a Pegasi	E.	55 42 3	3202	54 15 56	3208	52 49 56	3215	51 24 5	3224
	Jupiter	E.	89 30 6	2848	87 56 41	2836	86 23 0	2823	84 49 2	2811
	SUN	E.	113 35 28	3116	112 7 38	3103	110 39 32	3090	109 11 10	3075
15	Spica	W.	111 10 27	2658	112 48 3	2644	114 25 58	2630	116 4 12	2615
	Antares	W.	65 16 22	2658	66 53 58	2644	68 31 53	2629	70 10 8	2615
	a Pegasi	E.	44 18 22	3306	42 54 19	3333	41 30 46	3365	40 7 50	3403
	Jupiter	E.	76 54 57	2743	75 19 14	2728	73 43 11	2713	72 6 49	2700
	SUN	E.	101 44 56	3002	100 14 46	2988	98 44 18	2972	97 13 30	2957
16	Antares	W.	78 26 25	2540	80 6 43	2524	81 47 23	2507	83 28 26	2492
	Jupiter	E.	64 0 3	2624	62 21 40	2607	60 42 55	2590	59 3 48	2576
	SUN	E.	89 34 28	2876	88 1 38	2858	86 28 25	2841	84 54 50	2824
17	Antares	W.	91 59 15	2411	93 42 34	2395	95 26 16	2378	97 10 22	2362
	a Aquilæ	W.	49 39 44	4038	50 50 46	3941	52 3 24	3853	53 17 32	3770
	Jupiter	E.	50 42 46	2496	49 1 27	2480	47 19 45	2464	45 37 41	2448
	SUN	E.	77 1 21	2738	75 25 31	2720	73 49 18	2703	72 12 42	2686
18	Antares	W.	105 56 45	2282	107 43 11	2266	109 30 1	2249	111 17 15	2235
	a Aquilæ	W.	59 48 9	3432	61 9 49	3378	62 32 31	3326	63 56 12	3278
	Jupiter	E.	37 1 51	2373	35 17 37	2359	33 33 3	2345	31 48 9	2332

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
18	Sun	E.	70 35 43	2669	68 58 21	2652	67 20 36	2635	65 42 28	2618
19	Antares	W.	113 4 51	2220	114 52 49	2204	116 41 10	2190	118 29 53	2176
	a Aquilæ	W.	65 20 49	3234	66 46 18	3191	68 12 38	3152	69 39 45	3114
	Fomalhaut	W.	35 11 51	2948	36 43 9	2874	38 16 1	2808	39 50 19	2748
	Jupiter	E.	30 2 56	2320	28 17 25	2309	26 31 38	2298	24 45 36	2290
	Sun	E.	57 26 9	2538	55 45 48	2522	54 5 5	2507	52 24 1	2493
20	a Aquilæ	W.	77 5 38	2966	78 36 33	2944	80 7 58	2923	81 39 48	2903
	Fomalhaut	W.	47 59 16	2524	49 39 56	2490	51 21 23	2456	53 3 35	2429
	a Pegasi	W.	29 52 8	3514	31 12 17	3358	32 35 22	3233	34 1 4	3106
	Sun	E.	43 53 56	2429	42 11 3	2418	40 27 54	2408	38 44 30	2398
21	a Aquilæ	W.	89 24 10	2839	90 57 47	2838	92 31 32	2836	94 5 23	2836
	Fomalhaut	W.	61 43 40	2320	63 29 10	2303	65 15 5	2287	67 1 23	2274
	a Pegasi	W.	41 39 49	2711	43 16 14	2657	44 53 51	2610	46 32 33	2568
	Sun	E.	30 4 42	2369	28 20 23	2367	26 36 1	2368	24 51 40	2371
25	Sun	W.	26 51 11	2506	28 32 16	2516	30 13 7	2527	31 53 43	2540
	Regulus	E.	57 22 15	2159	55 32 45	2174	53 43 38	2189	51 54 54	2205
	Spica	E.	111 22 34	2158	109 32 55	2168	107 43 39	2182	105 54 45	2198
26	Sun	W.	40 11 57	2615	41 50 32	2632	43 28 43	2649	45 6 31	2666
	Regulus	E.	42 57 22	2291	41 11 9	2309	39 25 23	2328	37 40 4	2346
	Spica	E.	96 56 16	2281	95 9 49	2298	93 23 47	2316	91 38 11	2335
27	Sun	W.	53 9 19	2762	54 44 37	2781	56 19 30	2801	57 53 57	2820
	Saturn	W.	17 22 4	2661	18 59 36	2649	20 37 25	2642	22 15 23	2643
	Spica	E.	82 56 50	2427	81 13 54	2445	79 31 24	2464	77 49 20	2483
28	Sun	W.	65 39 55	2917	67 11 52	2937	68 43 24	2956	70 14 32	2975
	Saturn	W.	30 23 46	2682	32 0 50	2695	33 37 37	2708	35 14 6	2721
	Pollux	W.	21 28 41	2591	23 7 49	2606	24 46 36	2622	26 25 1	2640
	Spica	E.	69 25 33	2575	67 46 4	2593	66 7 0	2612	64 28 21	2629
	Antares	E.	115 19 44	2575	113 40 15	2593	112 1 11	2612	110 22 32	2629
29	Sun	W.	77 44 22	3066	79 13 13	3084	80 41 42	3101	82 9 50	3119
	Saturn	W.	43 11 58	2792	44 46 36	2807	46 20 55	2821	47 54 55	2835
	Pollux	W.	34 31 26	2722	36 7 37	2738	37 43 27	2753	39 18 57	2768
	Spica	E.	56 20 59	2715	54 44 39	2732	53 8 41	2747	51 33 4	2763
	Antares	E.	102 15 9	2714	100 38 48	2730	99 2 50	2747	97 27 13	2762
30	Sun	W.	89 25 28	3198	90 51 39	3213	92 17 33	3227	93 43 10	3242
	Saturn	W.	55 40 26	2903	57 12 41	2917	58 44 38	2930	60 16 19	2941
	Pollux	W.	47 11 33	2841	48 45 8	2854	50 18 26	2867	51 51 27	2880
	Spica	E.	43 40 0	2837	42 6 20	2851	40 32 58	2864	38 59 53	2876
	Antares	E.	89 34 7	2836	88 0 26	2850	86 27 3	2864	84 53 58	2876
31	Sun	W.	100 47 15	3306	102 11 20	3318	103 35 11	3329	104 58 49	3338
	Saturn	W.	67 51 4	2997	69 21 20	3008	70 51 23	3018	72 21 14	3027
	Pollux	W.	59 32 38	2938	61 4 9	2948	62 35 27	2958	64 6 32	2967
	Regulus	W.	22 52 18	2962	24 23 19	2969	25 54 11	2977	27 24 53	2984
	Spica	E.	31 18 24	2935	29 46 50	2946	28 15 29	2956	26 44 21	2965
	Antares	E.	77 12 27	2935	75 40 52	2946	74 9 31	2955	72 38 22	2965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
18	Sun	E.	64 3 57	2601	62 25 3	2585	60 45 47	2569	59 6 9	2553
19	Antares	W.	120 18 56	2163	122 8 20	2149	123 58 5	2135	125 48 11	2121
	α Aquilæ	W.	71 7 38	3060	72 36 12	3048	74 5 25	3019	75 35 14	2991
	Fomalhaut	W.	41 25 55	2695	43 2 42	2646	44 40 34	2601	46 19 28	2561
	Jupiter	E.	22 59 22	2283	21 12 57	2277	19 26 24	2277	17 39 50	2281
	Sun	E.	50 42 38	2479	49 0 55	2465	47 18 53	2453	45 36 33	2441
20	α Aquilæ	W.	83 12 3	2887	84 44 39	2872	86 17 34	2859	87 50 45	2848
	Fomalhaut	W.	54 46 28	2403	56 29 59	2380	58 14 3	2359	59 58 37	2339
	α Pegasi	W.	35 29 6	3005	36 59 12	2918	38 31 8	2840	40 4 44	2772
	Sun	E.	37 0 53	2390	35 17 4	2382	33 33 4	2377	31 48 56	2373
21	α Aquilæ	W.	95 39 17	2926	97 13 11	2928	98 47 2	2933	100 20 47	2940
	Fomalhaut	W.	68 48 1	2262	70 34 56	2253	72 22 4	2246	74 9 23	2240
	α Pegasi	W.	48 12 12	2530	49 52 43	2497	51 34 0	2468	53 15 58	2443
	Sun	E.	23 7 23	2378	21 23 16	2390	19 39 27	2404	17 55 58	2419
25	Sun	W.	33 34 1	2553	35 14 1	2567	36 53 41	2583	38 33 0	2599
	Regulus	E.	50 6 34	2221	48 18 38	2238	46 31 7	2256	44 44 2	2272
	Spica	E.	104 6 14	2214	102 18 7	2231	100 30 25	2247	98 43 8	2264
26	Sun	W.	46 43 54	2686	48 20 53	2704	49 57 27	2723	51 33 36	2743
	Regulus	E.	35 55 12	2366	34 10 48	2385	32 26 52	2406	30 43 25	2425
	Spica	E.	89 53 2	2353	88 8 19	2371	86 24 3	2389	84 40 13	2408
27	Sun	W.	59 27 59	2839	61 1 36	2859	62 34 47	2879	64 7 33	2898
	Saturn	W.	23 53 20	2647	25 31 11	2653	27 8 54	2661	28 46 26	2670
	Spica	E.	76 7 43	2502	74 26 32	2520	72 45 47	2539	71 5 28	2556
28	Sun	W.	71 45 16	2993	73 15 37	3013	74 45 34	3030	76 15 9	3048
	Saturn	W.	36 50 18	2735	38 26 11	2750	40 1 45	2763	41 37 1	2778
	Pollux	W.	28 3 2	2656	29 40 41	2672	31 17 58	2689	32 54 53	2705
	Spica	E.	62 50 6	2647	61 12 14	2664	59 34 46	2681	57 57 41	2698
	Antares	E.	108 44 16	2647	107 6 25	2664	105 28 57	2681	103 51 52	2698
29	Sun	W.	83 37 36	3136	85 5 2	3151	86 32 10	3167	87 58 59	3183
	Saturn	W.	49 28 37	2849	51 2 1	2864	52 35 6	2877	54 7 54	2890
	Pollux	W.	40 54 7	2783	42 28 57	2798	44 3 28	2812	45 37 40	2827
	Spica	E.	49 57 48	2779	48 22 52	2794	46 48 16	2808	45 13 59	2822
	Antares	E.	95 51 56	2779	94 17 0	2794	92 42 24	2808	91 8 6	2822
30	Sun	W.	95 8 30	3255	96 33 34	3268	97 58 23	3282	99 22 56	3294
	Saturn	W.	61 47 46	2954	63 18 57	2965	64 49 53	2977	66 20 35	2987
	Pollux	W.	53 24 12	2892	54 56 41	2905	56 28 54	2916	58 0 53	2927
	Spica	E.	37 27 4	2889	35 54 31	2901	34 22 14	2913	32 50 12	2924
	Antares	E.	83 21 9	2889	81 48 36	2901	80 16 18	2912	78 44 15	2924
31	Sun	W.	106 22 16	3349	107 45 31	3359	109 8 34	3368	110 31 27	3378
	Saturn	W.	73 50 53	3037	75 20 20	3044	76 49 38	3053	78 18 45	3060
	Pollux	W.	65 37 26	2977	67 8 8	2985	68 38 39	2993	70 9 0	3001
	Regulus	W.	28 55 26	2992	30 25 49	2998	31 56 4	3006	33 26 10	3013
	Spica	E.	25 13 25	2975	23 42 41	2984	22 12 8	2992	20 41 45	3001
	Antares	E.	71 7 25	2974	69 36 40	2983	68 6 6	2991	66 35 42	2999

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to Apparent Time.*	Diff. for 1 hour.
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Mon.	1	4 37 10.25	10.231	N.22 5 40.3	20.21	15 48.26	68.43	2 29.08	0.374
Tues.	2	4 41 15.98	10.246	22 13 33.8	19.24	15 48.13	68.48	2 19.92	0.389
Wed.	3	4 45 22.09	10.261	22 21 4.1	18.27	15 48.01	68.53	2 10.39	0.404
Thur.	4	4 49 28.54	10.275	22 28 11.0	17.29	15 47.89	68.58	2 0.52	0.419
Fri.	5	4 53 35.33	10.289	22 34 54.3	16.31	15 47.77	68.63	1 50.32	0.433
Sat.	6	4 57 42.44	10.302	22 41 14.0	15.32	15 47.66	68.67	1 39.80	0.446
Sun.	7	5 1 49.86	10.315	22 47 9.9	14.33	15 47.55	68.71	1 28.97	0.458
Mon.	8	5 5 57.57	10.326	22 52 41.8	13.33	15 47.44	68.75	1 17.85	0.470
Tues.	9	5 10 5.56	10.337	22 57 49.6	12.32	15 47.33	68.79	1 6.46	0.481
Wed.	10	5 14 13.80	10.348	23 2 33.4	11.31	15 47.23	68.82	0 54.81	0.491
Thur.	11	5 18 22.29	10.358	23 6 52.9	10.30	15 47.13	68.85	0 42.92	0.501
Fri.	12	5 22 30.99	10.367	23 10 48.1	9.29	15 47.04	68.88	0 30.81	0.510
Sat.	13	5 26 39.89	10.374	23 14 18.8	8.27	15 46.95	68.90	0 18.50	0.518
Sun.	14	5 30 48.96	10.381	23 17 25.0	7.26	15 46.86	68.92	0 6.01	0.525
Mon.	15	5 34 58.20	10.388	23 20 6.6	6.22	15 46.78	68.94	0 6.64	0.531
Tues.	16	5 39 7.58	10.393	23 22 23.5	5.19	15 46.70	68.95	0 19.42	0.536
Wed.	17	5 43 17.08	10.397	23 24 15.7	4.16	15 46.63	68.96	0 32.33	0.540
Thur.	18	5 47 26.69	10.400	23 25 43.1	3.13	15 46.56	68.97	0 45.35	0.544
Fri.	19	5 51 36.34	10.402	23 26 45.7	2.09	15 46.49	68.98	0 58.41	0.546
Sat.	20	5 55 46.02	10.403	23 27 23.4	1.05	15 46.43	68.98	1 11.50	0.546
Sun.	21	5 59 55.71	19.402	23 27 36.3	0.02	15 46.37	68.97	1 24.59	0.546
Mon.	22	6 4 5.39	10.401	23 27 24.4	1.01	15 46.32	68.96	1 37.67	0.544
Tues.	23	6 8 15.01	10.398	23 26 47.6	2.05	15 46.28	68.95	1 50.70	0.541
Wed.	24	6 12 24.56	10.394	23 25 45.9	3.08	15 46.25	68.94	2 3.65	0.537
Thur.	25	6 16 34.00	10.389	23 24 19.5	4.11	15 46.23	68.92	2 16.49	0.532
Fri.	26	6 20 43.30	10.382	23 22 28.4	5.14	15 46.21	68.90	2 29.19	0.526
Sat.	27	6 24 52.44	10.375	23 20 12.5	6.17	15 46.19	68.88	2 41.73	0.519
Sun.	28	6 29 1.39	10.367	23 17 31.9	7.19	15 46.17	68.86	2 54.10	0.511
Mon.	29	6 33 10.12	10.358	23 14 27.0	8.21	15 46.15	68.84	3 6.25	0.501
Tues.	30	6 37 18.63	10.348	23 10 57.5	9.23	15 46.15	68.81	3 18.16	0.491
Wed.	31	6 41 26.88	10.337	N.23 7 3.8	10.24	15 46.15	68.78	3 29.83	0.480

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to* / *subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Mon.	1	4 37 10.66	10.231	N.22 5 41.1	20.21	2 29.07	0.374	4 39 39.73
Tues.	2	4 41 16.39	10.246	22 13 34.5	19.24	2 19.90	0.389	4 43 36.29
Wed.	3	4 45 22.46	10.261	22 21 04.7	18.27	2 10.38	0.404	4 47 32.84
Thur.	4	4 49 28.89	10.275	22 28 11.5	17.29	2 0.51	0.419	4 51 29.40
Fri.	5	4 53 35.65	10.289	22 34 54.7	16.31	1 50.31	0.433	4 55 25.96
Sat.	6	4 57 42.73	10.302	22 41 14.3	15.32	1 39.79	0.446	4 59 22.52
Sun.	7	5 1 50.12	10.315	22 47 10.1	14.33	1 28.96	0.458	5 3 19.08
Mon.	8	5 5 57.80	10.326	22 52 42.0	13.33	1 17.84	0.470	5 7 15.64
Tues.	9	5 10 5.75	10.337	22 57 49.8	12.32	1 6.45	0.481	5 11 12.20
Wed.	10	5 14 13.95	10.348	23 2 33.5	11.31	0 54.80	0.491	5 15 8.75
Thur.	11	5 18 22.40	10.358	23 6 53.0	10.30	0 42.91	0.501	5 19 5.31
Fri.	12	5 22 31.07	10.367	23 10 48.1	9.29	0 30.80	0.510	5 23 1.87
Sat.	13	5 26 39.94	10.374	23 14 18.8	8.27	0 18.49	0.518	5 26 58.43
Sun.	14	5 30 48.98	10.381	23 17 25.0	7.25	0 6.01	0.525	5 30 54.99
Mon.	15	5 34 58.19	10.388	23 20 6.6	6.22	0 6.64	0.531	5 34 51.55
Tues.	16	5 39 7.53	10.393	23 22 23.5	5.19	0 19.42	0.536	5 38 48.11
Wed.	17	5 43 17.00	10.397	23 24 15.7	4.16	0 32.33	0.540	5 42 44.67
Thur.	18	5 47 26.56	10.400	23 25 43.1	3.13	0 45.34	0.544	5 46 41.22
Fri.	19	5 51 36.18	10.402	23 26 45.7	2.09	0 58.40	0.546	5 50 37.78
Sat.	20	5 55 45.82	10.403	23 27 23.4	1.05	1 11.49	0.546	5 54 34.33
Sun.	21	5 59 55.47	10.402	23 27 36.3	0.02	1 24.58	0.546	5 58 30.89
Mon.	22	6 4 5.11	10.401	23 27 24.4	1.01	1 37.66	0.544	6 2 27.45
Tues.	23	6 8 14.69	10.398	23 26 47.6	2.05	1 50.68	0.541	6 6 24.01
Wed.	24	6 12 24.20	10.394	23 25 46.0	3.08	2 3.63	0.537	6 10 20.57
Thur.	25	6 16 33.60	10.389	23 24 19.6	4.11	2 16.47	0.532	6 14 17.13
Fri.	26	6 20 42.86	10.382	23 22 28.5	5.14	2 29.17	0.526	6 18 13.69
Sat.	27	6 24 51.96	10.375	23 20 12.7	6.17	2 41.71	0.519	6 22 10.25
Sun.	28	6 29 0.88	10.367	23 17 32.2	7.19	2 54.07	0.511	6 26 6.81
Mon.	29	6 33 9.58	10.358	23 14 27.4	8.21	3 6.22	0.501	6 30 3.36
Tues.	30	6 37 18.05	10.348	23 10 58.0	9.28	3 18.13	0.491	6 33 59.92
Wed.	31	6 41 26.27	10.337	N.23 7 4.4	10.24	3 29.80	0.480	6 37 56.47

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ	THE SUN'S *True* LONGITUDE. λ′	Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		° ′ ″	′ ″	″	″			h. m. s.
1	152	70 52 56.7	52 37.5	143.61	—0.28	0.0062517	24.3	19 17 10.17
2	153	71 50 22.8	50 3.3	143.56	0.41	.0063092	23.7	19 13 14.26
3	154	72 47 47.6	47 27.9	143.51	0.54	.0063652	23.1	19 9 18.35
4	155	73 45 11.4	44 51.6	143.47	0.66	.0064199	22.5	19 5 22.43
5	156	74 42 34.0	42 14.0	143.42	0.77	.0064732	21.9	19 1 26.51
6	157	75 39 55.7	39 35.5	143.38	0.84	.0065252	21.4	18 57 30.60
7	158	76 37 16.6	36 56.2	143.34	0.89	.0065758	20.8	18 53 34.69
8	159	77 34 36.7	34 16.1	143.31	0.91	.0066251	20.3	18 49 38.78
9	160	78 31 56.0	31 35.2	143.29	0.91	.0066731	19.7	18 45 42.86
10	161	79 29 14.8	28 53.8	143.27	0.87	.0067197	19.1	18 41 46.95
11	162	80 26 33.1	26 11.9	143.25	0.80	.0067649	18.5	18 37 51.04
12	163	81 23 51.0	23 29.6	143.23	0.71	.0068086	17.9	18 33 55.13
13	164	82 21 8.4	20 46.8	143.21	0.60	.0068506	17.1	18 29 59.22
14	165	83 18 25.4	18 3.6	143.20	0.47	.0068969	16.4	18 26 3.30
15	166	84 15 42.2	15 20.2	143.19	0.34	.0069293	15.5	18 22 7.39
16	167	85 12 58.7	12 36.5	143.18	0.20	.0069655	14.6	18 18 11.48
17	168	86 10 15.0	9 52.6	143.17	—0.07	.0069995	13.7	18 14 15.57
18	169	87 7 31.1	7 8.5	143.16	+0.04	.0070312	12.7	18 10 19.66
19	170	88 4 46.9	4 24.1	143.15	0.13	.0070605	11.7	18 6 23.74
20	171	89 2 2.5	1 39.5	143.14	0.20	.0070874	10.6	18 2 27.83
21	172	89 59 17.8	58 54.6	143.13	0.24	.0071116	9.5	17 58 31.92
22	173	90 56 32.8	56 9.4	143.12	0.25	.0071332	8.4	17 54 36.01
23	174	91 53 47.5	53 23.9	143.11	0.24	.0071521	7.3	17 50 40.10
24	175	92 51 1.9	50 38.2	143.09	0.19	.0071684	6.3	17 46 44.18
25	176	93 48 15.8	47 51.9	143.07	0.11	.0071823	5.3	17 42 48.27
26	177	94 45 29.3	45 5.2	143.05	+0.01	.0071938	4.2	17 38 52.36
27	178	95 42 42.3	42 18.0	143.03	—0.10	.0072027	3.2	17 34 56.45
28	179	96 39 54.9	39 30.4	143.01	0.24	.0072091	2.2	17 31 0.54
29	180	97 37 7.1	36 42.4	143.00	0.36	.0072134	1.4	17 27 4.62
30	181	98 34 18.9	33 54.0	142.98	0.50	.0072157	0.6	17 23 8.71
31	182	99 31 30.3	31 5.2	142.97	—0.61	0.0072161	0.2	17 19 12.80

Note.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	14 54.9	14 51.8	54 37.6	−1.05	54 26.2	−0.85	7 43.0	1.63	8.9
2	14 49.3	14 47.4	54 17.1	0.66	54 10.2	0.48	8 22.4	1.66	9.9
3	14 46.1	14 45.4	54 5.5	−0.30	54 2.8	−0.14	9 2.9	1.72	10.9
4	14 45.2	14 45.5	54 2.0	+0.01	54 3.0	+0.15	9 45.4	1.83	11.9
5	14 46.2	14 47.4	54 5.7	0.29	54 9.9	0.41	10 30.7	1.95	12.9
6	14 48.9	14 50.7	54 15.5	0.52	54 22.3	0.62	11 19.3	2.09	13.9
7	14 52.8	14 55.3	54 30.2	0.71	54 39.2	0.80	12 10.7	2.19	14.9
8	14 58.1	15 1.1	54 49.3	0.88	55 0.3	0.96	13 4.2	2.25	15.9
9	15 4.3	15 7.8	55 12.2	1.03	55 25.1	1.11	13 58.1	2.23	16.9
10	15 11.6	15 15.6	55 38.8	1.18	55 53.4	1.26	14 51.0	2.16	17.9
11	15 19.8	15 24.2	56 8.9	1.33	56 25.2	1.40	15 41.8	2.07	18.9
12	15 28.9	15 33.8	56 42.4	1.46	57 0.3	1.52	16 30.4	1.98	19.9
13	15 38.9	15 44.1	57 18.9	1.58	57 38.1	1.62	17 17.2	1.93	20.9
14	15 49.4	15 54.8	57 57.8	1.66	58 17.8	1.67	18 3.2	1.92	21.9
15	16 0.3	16 5.7	58 37.8	1.66	58 57.5	1.62	18 49.8	1.97	22.9
16	16 10.9	16 15.8	59 16.7	1.56	59 34.9	1.45	19 38.4	2.09	23.9
17	16 20.3	16 24.3	59 51.5	1.30	60 6.1	1.13	20 30.4	2.26	24.9
18	16 27.7	16 30.3	60 18.4	0.91	60 27.8	0.65	21 27.2	2.47	25.9
19	16 32.0	16 32.6	60 33.9	+0.36	60 36.4	+0.05	22 28.9	2.66	26.9
20	16 32.2	16 30.8	60 35.1	−0.27	60 29.8	−0.60	23 34.0	2.75	27.9
21	16 28.3	16 24.8	60 20.6	0.93	60 7.7	1.22	☌		28.9
22	16 20.3	16 15.0	59 51.4	1.49	59 32.0	1.73	0 39.5	2.68	0.6
23	16 9.0	16 2.5	59 10.0	1.92	58 46.0	2.05	1 41.9	2.49	1.6
24	15 55.7	15 48.6	58 20.8	2.14	57 54.8	2.19	2 38.9	2.25	2.6
25	15 41.4	15 34.3	57 28.3	2.19	57 2.1	2.14	3 30.1	2.03	3.6
26	15 27.4	15 20.8	56 36.9	2.06	56 12.9	1.94	4 16.5	1.85	4.6
27	15 14.7	15 9.1	55 50.4	1.80	55 29.8	1.63	4 59.3	1.73	5.6
28	15 4.1	14 59.7	55 11.3	1.45	54 55.1	1.25	5 39.9	1.67	6.6
29	14 55.9	14 52.8	54 41.3	1.05	54 30.0	0.84	6 19.8	1.66	7.6
30	14 50.4	14 48.7	54 21.1	0.64	54 14.7	−0.43	7 0.0	1.70	8.6
31	14 47.6	14 47.3	54 10.9	−0.21	54 9.7	+0.01	7 41.9	1.79	9.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 10 21.99	1.7606	S. 1 0 36.7	14.346
1	12 12 7.60	1.7599	1 14 57.1	14.334
2	12 13 53.17	1.7593	1 29 16.8	14.321
3	12 15 38.71	1.7587	1 43 35.7	14.307
4	12 17 24.21	1.7582	1 57 53.7	14.293
5	12 19 9.69	1.7578	2 12 10.9	14.278
6	12 20 55.15	1.7575	2 26 27.1	14.262
7	12 22 40.59	1.7573	2 40 42.3	14.246
8	12 24 26.02	1.7572	2 54 56.5	14.229
9	12 26 11.45	1.7571	3 9 9.8	14.212
10	12 27 56.88	1.7571	3 23 22.0	14.193
11	12 29 42.30	1.7572	3 37 33.0	14.173
12	12 31 27.73	1.7573	3 51 42.8	14.153
13	12 33 13.17	1.7575	4 5 51.4	14.133
14	12 34 58.63	1.7578	4 19 58.8	14.112
15	12 36 44.11	1.7582	4 34 4.9	14.090
16	12 38 29.61	1.7586	4 48 9.6	14.068
17	12 40 15.14	1.7591	5 2 13.0	14.045
18	12 42 0.71	1.7598	5 16 15.0	14.021
19	12 43 46.32	1.7605	5 30 15.5	13.996
20	12 45 31.97	1.7613	5 44 14.5	13.971
21	12 47 17.67	1.7621	5 58 12.0	13.945
22	12 49 3.42	1.7630	6 12 7.9	13.918
23	12 50 49.23	1.7639	S. 6 26 2.2	13.891

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 52 35.09	1.7649	S. 6 39 54.9	13.864
1	12 54 21.02	1.7661	6 53 45.9	13.835
2	12 56 7.02	1.7673	7 7 35.1	13.805
3	12 57 53.10	1.7686	7 21 22.5	13.775
4	12 59 39.25	1.7699	7 35 8.1	13.745
5	13 1 25.49	1.7714	7 48 51.9	13.714
6	13 3 11.82	1.7730	8 2 33.8	13.682
7	13 4 58.24	1.7745	8 16 13.8	13.649
8	13 6 44.75	1.7761	8 29 51.7	13.615
9	13 8 31.37	1.7778	8 43 27.6	13.581
10	13 10 18.09	1.7795	8 57 1.5	13.546
11	13 12 4.91	1.7813	9 10 33.2	13.510
12	13 13 51.85	1.7833	9 24 2.7	13.473
13	13 15 38.91	1.7853	9 37 30.0	13.436
14	13 17 26.08	1.7873	9 50 55.1	13.400
15	13 19 13.38	1.7894	10 4 18.0	13.363
16	13 21 0.81	1.7916	10 17 38.6	13.323
17	13 22 48.37	1.7938	10 30 56.7	13.282
18	13 24 36.06	1.7961	10 44 12.4	13.242
19	13 26 23.90	1.7985	10 57 25.7	13.200
20	13 28 11.88	1.8010	11 10 36.4	13.158
21	13 30 0.01	1.8035	11 23 44.6	13.115
22	13 31 48.30	1.8061	11 36 50.2	13.071
23	13 33 36.74	1.8087	11 49 53.2	13.027
24	13 35 25.34	1.8114	S.12 2 53.5	12.982

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	13 35 25.34	1.8114	S.12 2 53.5	12.982
1	13 37 14.10	1.8142	12 15 51.0	12.936
2	13 39 3.04	1.8171	12 28 45.8	12.890
3	13 40 52.15	1.8199	12 41 37.8	12.843
4	13 42 41.43	1.8229	12 54 27.0	12.796
5	13 44 30.90	1.8260	13 7 13.2	12.745
6	13 46 20.55	1.8290	13 19 56.4	12.696
7	13 48 10.38	1.8321	13 32 36.6	12.645
8	13 50 0.40	1.8353	13 45 13.8	12.594
9	13 51 50.62	1.8386	13 57 47.9	12.542
10	13 53 41.04	1.8419	14 10 18.9	12.489
11	13 55 31.65	1.8453	14 22 46.6	12.435
12	13 57 22.47	1.8488	14 35 11.1	12.380
13	13 59 13.51	1.8523	14 47 32.3	12.325
14	14 1 4.75	1.8558	14 59 50.2	12.270
15	14 2 56.20	1.8594	15 12 4.7	12.214
16	14 4 47.87	1.8630	15 24 15.8	12.156
17	14 6 39.76	1.8668	15 36 23.4	12.096
18	14 8 31.88	1.8706	15 48 27.3	12.036
19	14 10 24.23	1.8744	16 0 27.6	11.976
20	14 12 16.80	1.8782	16 12 24.4	11.916
21	14 14 9.61	1.8822	16 24 17.5	11.854
22	14 16 2.66	1.8861	16 36 6.9	11.791
23	14 17 55.94	1.8901	S.16 47 52.4	11.727

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 19 49.47	1.8942	S.16 59 34.1	11.662
1	14 21 43.25	1.8984	17 11 11.9	11.597
2	14 23 37.28	1.9025	17 22 45.8	11.531
3	14 25 31.55	1.9067	17 34 15.6	11.464
4	14 27 26.08	1.9110	17 45 41.4	11.396
5	14 29 20.87	1.9153	17 57 3.1	11.327
6	14 31 15.92	1.9197	18 8 20.6	11.257
7	14 33 11.23	1.9241	18 19 33.9	11.187
8	14 35 6.81	1.9285	18 30 43.0	11.115
9	14 37 2.65	1.9330	18 41 47.7	11.042
10	14 38 58.76	1.9375	18 52 48.0	10.968
11	14 40 55.14	1.9420	19 3 43.9	10.894
12	14 42 51.80	1.9466	19 14 35.3	10.819
13	14 44 48.74	1.9513	19 25 22.2	10.743
14	14 46 45.95	1.9559	19 36 4.5	10.666
15	14 48 43.44	1.9606	19 46 42.1	10.588
16	14 50 41.22	1.9653	19 57 15.0	10.509
17	14 52 39.28	1.9701	20 7 43.2	10.429
18	14 54 37.63	1.9749	20 18 6.5	10.348
19	14 56 36.27	1.9797	20 28 24.9	10.266
20	14 58 35.20	1.9846	20 38 38.4	10.184
21	15 0 34.42	1.9895	20 48 46.9	10.100
22	15 2 33.94	1.9944	20 58 50.4	10.016
23	15 4 33.75	1.9993	21 8 48.8	9.930
24	15 6 33.85	2.0043	S.21 18 42.0	9.844

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 5.					SUNDAY 7.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	15 6 33.85	2.0043	S.21 18 42.0	9.844	0	16 48 31.85	2.2373	S.27 13 5.3	4.561
1	15 8 34.25	2.0093	21 28 30.0	9.756	1	16 50 46.20	2.2413	27 17 35.0	4.429
2	15 10 34.95	2.0142	21 38 12.7	9.667	2	16 53 0.80	2.2452	27 21 56.8	4.296
3	15 12 35.95	2.0193	21 47 50.0	9.577	3	16 55 15.63	2.2491	27 26 10.6	4.163
4	15 14 37.25	2.0243	21 57 22.0	9.487	4	16 57 30.69	2.2529	27 30 16.4	4.029
5	15 16 38.86	2.0293	22 6 48.5	9.396	5	16 59 45.98	2.2567	27 34 14.1	3.894
6	15 18 40.77	2.0344	22 16 9.5	9.304	6	17 2 1.50	2.2604	27 38 3.7	3.758
7	15 20 42.99	2.0395	22 25 24.9	9.210	7	17 4 17.24	2.2640	27 41 45.1	3.621
8	15 22 45.51	2.0445	22 34 34.7	9.115	8	17 6 33.18	2.2675	27 45 18.3	3.485
9	15 24 48.33	2.0496	22 43 38.8	9.020	9	17 8 49.33	2.2709	27 48 43.3	3.347
10	15 26 51.46	2.0546	22 52 37.2	8.924	10	17 11 5.68	2.2743	27 52 0.0	3.208
11	15 28 54.89	2.0597	23 1 29.7	8.827	11	17 13 22.24	2.2776	27 55 8.3	3.068
12	15 30 58.63	2.0649	23 10 16.4	8.728	12	17 15 38.99	2.2807	27 58 8.2	2.928
13	15 33 2.68	2.0700	23 18 57.1	8.629	13	17 17 55.93	2.2838	28 0 59.7	2.788
14	15 35 7.03	2.0751	23 27 31.9	8.529	14	17 20 13.05	2.2868	28 3 42.8	2.648
15	15 37 11.69	2.0803	23 36 0.7	8.428	15	17 22 30.35	2.2898	28 6 17.5	2.507
16	15 39 16.66	2.0854	23 44 23.3	8.326	16	17 24 47.83	2.2927	28 8 43.7	2.365
17	15 41 21.94	2.0905	23 52 39.8	8.223	17	17 27 5.48	2.2955	28 11 1.3	2.222
18	15 43 27.52	2.0956	24 0 50.1	8.119	18	17 29 23.29	2.2982	28 13 10.3	2.079
19	15 45 33.41	2.1007	24 8 54.1	8.014	19	17 31 41.26	2.3008	28 15 10.7	1.935
20	15 47 39.61	2.1058	24 16 51.8	7.908	20	17 33 59.38	2.3033	28 17 2.5	1.791
21	15 49 46.11	2.1109	24 24 43.1	7.801	21	17 36 17.65	2.3057	28 18 45.7	1.646
22	15 51 52.92	2.1160	24 32 27.9	7.693	22	17 38 36.06	2.3079	28 20 20.1	1.500
23	15 54 0.03	2.1210	S.24 40 6.2	7.584	23	17 40 54.60	2.3101	S.28 21 45.8	1.355
	SATURDAY 6.					MONDAY 8.			
0	15 56 7.44	2.1261	S.24 47 38.0	7.475	0	17 43 13.27	2.3122	S.28 23 2.8	1.210
1	15 58 15.16	2.1311	24 55 3.2	7.364	1	17 45 32.06	2.3143	28 24 11.0	1.064
2	16 0 23.18	2.1361	25 2 21.6	7.251	2	17 47 50.98	2.3163	28 25 10.4	0.917
3	16 2 31.49	2.1410	25 9 33.3	7.138	3	17 50 10.01	2.3181	28 26 1.0	0.770
4	16 4 40.10	2.1460	25 16 38.2	7.025	4	17 52 29.15	2.3198	28 26 42.8	0.623
5	16 6 49.01	2.1509	25 23 36.3	6.910	5	17 54 48.38	2.3214	28 27 15.7	0.475
6	16 8 58.21	2.1558	25 30 27.5	6.795	6	17 57 7.71	2.3229	28 27 39.8	0.327
7	16 11 7.71	2.1607	25 37 11.7	6.678	7	17 59 27.13	2.3243	28 27 55.0	0.178
8	16 13 17.50	2.1656	25 43 48.9	6.561	8	18 1 46.63	2.3256	28 28 1.2	0.029
9	16 15 27.58	2.1704	25 50 19.0	6.442	9	18 4 6.20	2.3268	28 27 58.5	0.119
10	16 17 37.95	2.1752	25 56 42.0	6.323	10	18 6 25.84	2.3279	28 27 46.9	0.268
11	16 19 48.60	2.1799	26 2 57.8	6.203	11	18 8 45.55	2.3289	28 27 26.3	0.418
12	16 21 59.53	2.1845	26 9 6.3	6.081	12	18 11 5.31	2.3298	28 26 56.8	0.567
13	16 24 10.74	2.1892	26 15 7.5	5.959	13	18 13 25.12	2.3306	28 26 18.3	0.717
14	16 26 22.24	2.1939	26 21 1.4	5.836	14	18 15 44.98	2.3313	28 25 30.8	0.866
15	16 28 34.01	2.1985	26 26 47.9	5.713	15	18 18 4.88	2.3319	28 24 34.4	1.016
16	16 30 46.05	2.2030	26 32 27.0	5.589	16	18 20 24.81	2.3324	28 23 29.0	1.166
17	16 32 58.37	2.2075	26 37 58.6	5.463	17	18 22 44.76	2.3327	28 22 14.5	1.317
18	16 35 10.95	2.2119	26 43 22.6	5.337	18	18 25 4.73	2.3330	28 20 51.0	1.467
19	16 37 23.79	2.2163	26 48 39.0	5.210	19	18 27 24.72	2.3332	28 19 18.5	1.617
20	16 39 36.90	2.2206	26 53 47.8	5.082	20	18 29 44.72	2.3332	28 17 37.0	1.766
21	16 41 50.26	2.2248	26 58 48.9	4.953	21	18 32 4.71	2.3332	28 15 46.6	1.915
22	16 44 3.87	2.2290	27 3 42.2	4.823	22	18 34 24.70	2.3331	28 13 47.2	2.066
23	16 46 17.74	2.2332	27 8 27.7	4.692	23	18 36 44.68	2.3329	28 11 38.7	2.217
24	16 48 31.85	2.2373	S.27 13 5.3	4.561	24	18 39 4.65	2.3326	S.28 9 21.2	2.367

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 9.					**THURSDAY 11.**			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	18 39 4.65	2.3326	S.28 9 21.2	2.367	0	20 29 0.75	2.2222	S.23 29 5.4	9.106
1	18 41 24.60	2.3321	28 6 54.7	2.517	1	20 31 13.98	2.2187	23 19 55.3	9.231
2	18 43 44.51	2.3315	28 4 19.2	2.666	2	20 33 27.00	2.2152	23 10 37.7	9.356
3	18 46 4.38	2.3309	28 1 34.8	2.815	3	20 35 39.81	2.2116	23 1 12.6	9.478
4	18 48 24.21	2.3302	27 58 41.4	2.965	4	20 37 52.40	2.2079	22 51 40.2	9.600
5	18 50 44.00	2.3295	27 55 39.0	3.114	5	20 40 4.76	2.2042	22 42 0.6	9.721
6	18 53 3.75	2.3287	27 52 27.7	3.263	6	20 42 16.91	2.2006	22 32 13.7	9.841
7	18 55 23.44	2.3275	27 49 7.5	3.412	7	20 44 28.84	2.1970	22 22 19.6	9.960
8	18 57 43.05	2.3263	27 45 38.3	3.561	8	20 46 40.55	2.1934	22 12 18.5	10.078
9	19 0 2.59	2.3251	27 42 0.2	3.710	9	20 48 52.05	2.1898	22 2 10.3	10.195
10	19 2 22.06	2.3238	27 38 13.2	3.858	10	20 51 3.33	2.1861	21 51 55.1	10.312
11	19 4 41.45	2.3225	27 34 17.3	4.005	11	20 53 14.39	2.1825	21 41 32.9	10.428
12	19 7 0.76	2.3210	27 30 12.6	4.152	12	20 55 25.23	2.1788	21 31 3.7	10.543
13	19 9 19.98	2.3194	27 25 59.1	4.299	13	20 57 35.85	2.1751	21 20 27.7	10.656
14	19 11 39.09	2.3177	27 21 36.7	4.447	14	20 59 46.25	2.1715	21 9 44.9	10.768
15	19 13 58.10	2.3160	27 17 5.5	4.594	15	21 1 56.43	2.1678	20 58 55.5	10.879
16	19 16 17.01	2.3142	27 12 25.5	4.740	16	21 4 6.39	2.1642	20 47 59.4	10.990
17	19 18 35.81	2.3123	27 7 36.8	4.885	17	21 6 16.14	2.1606	20 36 56.6	11.101
18	19 20 54.49	2.3103	27 2 39.4	5.030	18	21 8 25.67	2.1570	20 25 47.2	11.211
19	19 23 13.05	2.3083	26 57 33.3	5.175	19	21 10 34.99	2.1535	20 14 31.3	11.319
20	19 25 31.49	2.3062	26 52 18.5	5.320	20	21 12 44.09	2.1499	20 3 9.0	11.425
21	19 27 49.79	2.3039	26 46 55.0	5.464	21	21 14 52.98	2.1464	19 51 40.3	11.531
22	19 30 7.95	2.3016	26 41 22.9	5.606	22	21 17 1.66	2.1428	19 40 5.2	11.637
23	19 32 25.98	2.2992	S.26 35 42.3	5.748	23	21 19 10.12	2.1393	S.19 28 23.8	11.741
	WEDNESDAY 10.					**FRIDAY 12.**			
0	19 34 43.86	2.2967	S.26 29 53.2	5.889	0	21 21 18.37	2.1358	S.19 16 36.3	11.844
1	19 37 1.59	2.2942	26 23 55.6	6.031	1	21 23 26.42	2.1324	19 4 42.6	11.946
2	19 39 19.17	2.2917	26 17 49.5	6.173	2	21 25 34.26	2.1289	18 52 42.8	12.047
3	19 41 36.60	2.2891	26 11 34.8	6.314	3	21 27 41.89	2.1255	18 40 37.0	12.147
4	19 43 53.87	2.2865	26 5 11.7	6.454	4	21 29 49.32	2.1221	18 28 25.2	12.246
5	19 46 10.98	2.2837	25 58 40.3	6.593	5	21 31 56.55	2.1188	18 16 7.5	12.344
6	19 48 27.91	2.2808	25 52 0.6	6.732	6	21 34 3.58	2.1156	18 3 43.9	12.442
7	19 50 44.67	2.2779	25 45 12.5	6.871	7	21 36 10.42	2.1123	17 51 14.5	12.538
8	19 53 1.26	2.2751	25 38 16.1	7.008	8	21 38 17.06	2.1090	17 38 39.4	12.633
9	19 55 17.68	2.2722	25 31 11.6	7.144	9	21 40 23.50	2.1058	17 25 58.6	12.727
10	19 57 33.92	2.2691	25 23 58.9	7.280	10	21 42 29.75	2.1026	17 13 12.2	12.820
11	19 59 49.97	2.2659	25 16 38.0	7.416	11	21 44 35.81	2.0995	17 0 20.2	12.912
12	20 2 5.83	2.2627	25 9 9.0	7.551	12	21 46 41.69	2.0964	16 47 22.8	13.002
13	20 4 21.50	2.2596	25 1 31.9	7.685	13	21 48 47.38	2.0934	16 34 20.0	13.092
14	20 6 36.98	2.2564	24 53 46.8	7.818	14	21 50 52.89	2.0904	16 21 11.8	13.182
15	20 8 52.27	2.2532	24 45 53.8	7.950	15	21 52 58.23	2.0875	16 7 58.2	13.270
16	20 11 7.36	2.2499	24 37 52.8	8.082	16	21 55 3.39	2.0846	15 54 39.4	13.357
17	20 13 22.26	2.2465	24 29 43.9	8.213	17	21 57 8.38	2.0817	15 41 15.4	13.443
18	20 15 36.95	2.2431	24 21 27.3	8.343	18	21 59 13.19	2.0789	15 27 46.3	13.528
19	20 17 51.44	2.2398	24 13 2.9	8.472	19	22 1 17.84	2.0762	15 14 12.1	13.611
20	20 20 5.73	2.2364	24 4 30.7	8.601	20	22 3 22.33	2.0735	15 0 32.9	13.693
21	20 22 19.80	2.2328	23 55 50.7	8.729	21	22 5 26.66	2.0708	14 46 48.9	13.774
22	20 24 33.66	2.2292	23 47 3.1	8.855	22	22 7 30.83	2.0682	14 33 0.0	13.856
23	20 26 47.31	2.2257	23 38 8.0	8.981	23	22 9 34.84	2.0657	14 19 6.2	13.936
24	20 29 0.75	2.2222	S.23 29 5.4	9.106	24	22 11 38.71	2.0633	S.14 5 7.7	14.014

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 13.			
	h. m. s.	s.	° ′ ″	″
0	22 11 38.71	2.0633	S.14 5 7.7	14.014
1	22 13 42.43	2.0609	13 51 4.5	14.092
2	22 15 46.01	2.0586	13 36 56.7	14.169
3	22 17 49.45	2.0562	13 22 44.3	14.245
4	22 19 52.75	2.0539	13 8 27.4	14.319
5	22 21 55.92	2.0518	12 54 6.1	14.391
6	22 23 58.97	2.0497	12 39 40.5	14.463
7	22 26 1.89	2.0477	12 25 10.6	14.534
8	22 28 4.69	2.0457	12 10 36.4	14.604
9	22 30 7.37	2.0438	11 55 58.0	14.674
10	22 32 9.94	2.0419	11 41 15.5	14.743
11	22·34 12.40	2.0402	11 26 28.9	14.810
12	22 36 14.76	2.0385	11 11 38.4	14.875
13	22 38 17.02	2.0369	10 56 44.0	14.940
14	22 40 19.18	2.0354	10 41 45.7	15.004
15	22 42 21.26	2.0339	10 26 43.6	15.066
16	22 44 23.25	2.0324	10 11 37.8	15.127
17	22 46 25.15	2.0310	9 56 28.3	15.187
18	22 48 26.97	2.0297	9 41 15.3	15.247
19	22 50 28.72	2.0286	9 25 58.7	15.305
20	22 52 30.40	2.0275	9 10 38.7	15.362
21	22 54 32.02	2.0265	8 55 15.3	15.418
22	22 56 33.58	2.0255	8 39 48.6	15.473
23	22 58 35.08	2.0246	S. 8 24 18.6	15.527
	SUNDAY 14.			
0	23 0 36.53	2.0238	S. 8 8 45.4	15.579
1	23 2 37.93	2.0231	7 53 9.1	15.631
2	23 4 39.30	2.0225	7 37 29.7	15.682
3	23 6 40.64	2.0220	7 21 47.3	15.731
4	23 8 41.95	2.0215	7 6 2.0	15.779
5	23 10 43.22	2.0210	6 50 13.8	15.826
6	23 12 44.47	2.0207	6 34 22.9	15.872
7	23 14 45.70	2.0205	6 18 29.2	15.917
8	23 16 46.93	2.0205	6 2 32.9	15.960
9	23 18 48.16	2.0205	5 46 34.0	16.002
10	23 20 49.39	2.0206	5 30 32.6	16.044
11	23 22 50.62	2.0206	5 14 28.7	16.084
12	23 24 51.85	2.0208	4 58 22.5	16.123
13	23 26 53.10	2.0211	4 42 14.0	16.161
14	23 28 54.38	2.0215	4 26 3.2	16.198
15	23 30 55.69	2.0220	4 9 50.3	16.233
16	23 32 57.03	2.0225	3 53 35.3	16.267
17	23 34 58.40	2.0231	3 37 18.3	16.299
18	23 36 59.80	2.0238	3 20 59.4	16.331
19	23 39 1.26	2.0247	3 4 38.6	16.362
20	23 41 2.77	2.0257	2 48 16.0	16.391
21	23 43 4.34	2.0267	2 31 51.7	16.419
22	23 45 5.97	2.0278	2 15 25.7	16.446
23	23 47 7.67	2.0290	1 58 58.1	16.472
24	23 49 9.45	2.0304	S. 1 42 29.1	16.496

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 15.			
	h. m. s.	s.	° ′ ″	″
0	23 49 9.45	2.0304	S. 1 42 29.1	16.496
1	23 51 11.32	2.0318	1 25 58.6	16.519
2	23 53 13.27	2.0333	1 9 26.8	16.541
3	23 55 15.31	2.0349	0 52 53.7	16.561
4	23 57 17.45	2.0365	0 36 19.4	16.580
5	23 59 19.69	2.0382	0 19 44.1	16.598
6	0 1 22.04	2.0401	S. 0 3 7.7	16.615
7	0 3 24.50	2.0421	N. 0 13 29.7	16.631
8	0 5 27.09	2.0442	0 30 8.0	16.644
9	0 7 29.81	2.0464	0 46 47.0	16.656
10	0 9 32.66	2.0486	1 3 26.7	16.667
11	0 11 35.64	2.0509	1 20 7.1	16.678
12	0 13 38.76	2.0533	1 36 48.1	16.687
13	0 15 42.03	2.0559	1 53 29.6	16.695
14	0 17 45.46	2.0586	2 10 11.4	16.700
15	0 19 49.06	2.0613	2 26 53.5	16.705
16	0 21 52.82	2.0641	2 43 35.9	16.707
17	0 23 56.75	2.0671	3 0 18.3	16.708
18	0 26 0.87	2.0702	3 17 0.8	16.708
19	0 28 5.17	2.0733	3 33 43.3	16.707
20	0 30 9.66	2.0764	3 50 25.7	16.704
21	0 32 14.34	2.0797	4 7 7.8	16.699
22	0 34 19.22	2.0831	4 23 49.6	16.694
23	0 36 24.31	2.0866	N. 4 40 31.1	16.687
	TUESDAY 16.			
0	0 38 29.63	2.0905	N. 4 57 12.1	16.678
1	0 40 35.17	2.0942	5 13 52.5	16.668
2	0 42 40.93	2.0979	5 30 32.3	16.656
3	0 44 46.92	2.1018	5 47 11.3	16.643
4	0 46 53.14	2.1058	6 3 49.5	16.626
5	0 48 59.61	2.1099	6 20 26.7	16.611
6	0 51 6.33	2.1141	6 37 2.8	16.593
7	0 53 13.30	2.1185	6 53 37.8	16.573
8	0 55 20.54	2.1229	7 10 11.6	16.552
9	0 57 28.04	2.1273	7 26 44.1	16.530
10	0 59 35.81	2.1318	7 43 15.2	16.505
11	1 1 43.86	2.1365	7 59 44.7	16.478
12	1 3 52.19	2.1413	8 16 12.6	16.451
13	1 6 0.81	2.1462	8 32 38.8	16.422
14	1 8 9.73	2.1512	8 49 3.2	16.391
15	1 10 18.96	2.1563	9 5 25.7	16.358
16	1 12 28.49	2.1614	9 21 46.2	16.323
17	1 14 38.33	2.1666	9 38 4.5	16.286
18	1 16 48.49	2.1720	9 54 20.5	16.247
19	1 18 58.97	2.1775	10 10 34.2	16.208
20	1 21 9.78	2.1830	10 26 45.5	16.167
21	1 23 20.93	2.1887	10 42 54.2	16.123
22	1 25 32.42	2.1944	10 59 0.2	16.078
23	1 27 44.25	2.2001	11 15 3.5	16.031
24	1 29 56.43	2.2059	N.11 31 3.9	15.981

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 29 56.43	2.2059	N.11 31 3.9	15.981
1	1 32 8.96	2.2119	11 47 1.3	15.931
2	1 34 21.86	2.2181	12 2 55.6	15.877
3	1 36 35.13	2.2243	12 18 46.6	15.822
4	1 38 48.77	2.2304	12 34 34.3	15.766
5	1 41 2.78	2.2366	12 50 18.6	15.709
6	1 43 17.17	2.2430	13 5 59.4	15.649
7	1 45 31.94	2.2495	13 21 36.5	15.586
8	1 47 47.11	2.2561	13 37 9.8	15.521
9	1 50 2.67	2.2627	13 52 39.1	15.455
10	1 52 18.63	2.2694	14 8 4.4	15.387
11	1 54 34.99	2.2762	14 23 25.5	15.317
12	1 56 51.77	2.2831	14 38 42.4	15.245
13	1 59 8.96	2.2900	14 53 54.9	15.170
14	2 1 26.57	2.2969	15 9 2.9	15.094
15	2 3 44.59	2.3039	15 24 6.2	15.016
16	2 6 3.03	2.3110	15 39 4.8	14.936
17	2 8 21.91	2.3182	15 53 58.5	14.854
18	2 10 41.22	2.3254	16 8 47.3	14.770
19	2 13 0.96	2.3327	16 23 31.0	14.683
20	2 15 21.15	2.3401	16 38 9.3	14.593
21	2 17 41.78	2.3476	16 52 42.2	14.502
22	2 20 2.86	2.3550	17 7 9.6	14.410
23	2 22 24.38	2.3625	N.17 21 31.5	14.316

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 24 46.35	2.3700	N.17 35 47.6	14.219
1	2 27 8.78	2.3777	17 49 57.8	14.120
2	2 29 31.67	2.3854	18 4 2.0	14.018
3	2 31 55.02	2.3930	18 18 0.0	13.914
4	2 34 18.83	2.4007	18 31 51.7	13.808
5	2 36 43.10	2.4084	18 45 37.0	13.701
6	2 39 7.84	2.4162	18 59 15.9	13.592
7	2 41 33.04	2.4240	19 12 48.1	13.480
8	2 43 58.72	2.4319	19 26 13.5	13.365
9	2 46 24.87	2.4398	19 39 31.9	13.248
10	2 48 51.49	2.4476	19 52 43.3	13.130
11	2 51 18.58	2.4554	20 5 47.5	13.009
12	2 53 46.14	2.4633	20 18 44.4	12.885
13	2 56 14.18	2.4712	20 31 33.8	12.760
14	2 58 42.69	2.4791	20 44 15.7	12.634
15	3 1 11.67	2.4870	20 56 49.9	12.505
16	3 3 41.13	2.4949	21 9 16.3	12.372
17	3 6 11.06	2.5028	21 21 34.6	12.237
18	3 8 41.47	2.5107	21 33 44.8	12.101
19	3 11 12.35	2.5186	21 45 46.8	11.964
20	3 13 43.70	2.5264	21 57 40.5	11.824
21	3 16 15.52	2.5342	22 9 25.7	11.681
22	3 18 47.81	2.5420	22 21 2.2	11.536
23	3 21 20.56	2.5497	22 32 30.0	11.390
24	3 23 53.77	2.5574	N.22 43 49.0	11.242

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 23 53.77	2.5574	N.22 43 49.0	11.242
1	3 26 27.45	2.5651	22 54 59.0	11.090
2	3 29 1.58	2.5727	23 5 59.8	10.936
3	3 31 36.17	2.5803	23 16 51.4	10.781
4	3 34 11.22	2.5879	23 27 33.6	10.624
5	3 36 46.72	2.5953	23 38 6.3	10.465
6	3 39 22.65	2.6026	23 48 29.4	10.304
7	3 41 59.02	2.6099	23 58 42.8	10.141
8	3 44 35.84	2.6172	24 8 46.3	9.978
9	3 47 13.09	2.6244	24 18 39.8	9.808
10	3 49 50.77	2.6314	24 28 23.3	9.639
11	3 52 28.86	2.6383	24 37 56.5	9.468
12	3 55 7.36	2.6452	24 47 19.4	9.296
13	3 57 46.28	2.6520	24 56 31.9	9.120
14	4 0 25.60	2.6587	25 5 33.8	8.943
15	4 3 5.32	2.6653	25 14 25.0	8.764
16	4 5 45.43	2.6718	25 23 5.5	8.584
17	4 8 25.93	2.6781	25 31 35.1	8.402
18	4 11 6.80	2.6843	25 39 53.8	8.219
19	4 13 48.04	2.6903	25 48 1.4	8.033
20	4 16 29.64	2.6962	25 55 57.8	7.846
21	4 19 11.59	2.7020	26 3 43.0	7.658
22	4 21 53.88	2.7077	26 11 16.8	7.468
23	4 24 36.51	2.7133	N.26 18 39.1	7.276

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 27 19.47	2.7187	N.26 25 49.9	7.083
1	4 30 2.75	2.7238	26 32 49.0	6.887
2	4 32 46.33	2.7288	26 39 36.4	6.691
3	4 35 30.21	2.7337	26 46 12.0	6.494
4	4 38 14.38	2.7385	26 52 35.7	6.296
5	4 40 58.82	2.7430	26 58 47.5	6.096
6	4 43 43.53	2.7474	27 4 47.2	5.894
7	4 46 28.50	2.7515	27 10 34.8	5.691
8	4 49 13.71	2.7554	27 16 10.2	5.488
9	4 51 59.14	2.7591	27 21 33.4	5.284
10	4 54 44.80	2.7626	27 26 44.3	5.078
11	4 57 30.68	2.7660	27 31 42.8	4.871
12	5 0 16.75	2.7694	27 36 28.9	4.664
13	5 3 3.01	2.7724	27 41 2.5	4.456
14	5 5 49.44	2.7752	27 45 23.6	4.247
15	5 8 36.03	2.7778	27 49 32.1	4.037
16	5 11 22.77	2.7802	27 53 28.0	3.826
17	5 14 9.65	2.7823	27 57 11.2	3.614
18	5 16 56.64	2.7841	28 0 41.7	3.402
19	5 19 43.74	2.7858	28 3 59.5	3.190
20	5 22 30.94	2.7874	28 7 4.6	2.978
21	5 25 18.23	2.7887	28 9 56.8	2.764
22	5 28 5.59	2.7897	28 12 36.2	2.550
23	5 30 52.99	2.7904	28 15 2.8	2.336
24	5 33 40.43	2.7910	N.28 17 16.6	2.122

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 33 40.43	2.7910	N.28 17 16.6	2.122
1	5 36 27.90	2.7914	28 19 17.5	1.908
2	5 39 15.39	2.7915	28 21 5.6	1.694
3	5 42 2.88	2.7913	28 22 40.8	1.479
4	5 44 50.35	2.7910	28 24 3.1	1.265
5	5 47 37.80	2.7905	28 25 12.6	1.050
6	5 50 25.22	2.7898	28 26 9.2	0.835
7	5 53 12.58	2.7887	28 26 52.9	0.621
8	5 55 59.86	2.7874	28 27 23.8	0.406
9	5 58 47.06	2.7859	28 27 41.9	0.195
10	6 1 34.16	2.7842	28 27 47.2	0.019
11	6 4 21.16	2.7823	28 27 39.7	0.232
12	6 7 8.04	2.7802	28 27 19.4	0.444
13	6 9 54.78	2.7777	28 26 46.4	0.658
14	6 12 41.36	2.7750	28 26 0.7	0.867
15	6 15 27.78	2.7722	28 25 2.4	1.077
16	6 18 14.02	2.7692	28 23 51.5	1.287
17	6 21 0.08	2.7659	28 22 28.0	1.496
18	6 23 45.93	2.7623	28 20 52.0	1.704
19	6 26 31.56	2.7586	28 19 3.5	1.911
20	6 29 16.97	2.7547	28 17 2.6	2.117
21	6 32 2.13	2.7505	28 14 49.4	2.322
22	6 34 47.03	2.7461	28 12 23.9	2.527
23	6 37 31.67	2.7416	N.28 9 46.1	2.731

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 40 16.03	2.7369	N 28 6 56.1	2.934
1	6 43 0.10	2.7320	28 3 54.0	3.134
2	6 45 43.87	2.7269	28 0 39.9	3.334
3	6 48 27.33	2.7216	27 57 13.9	3.532
4	6 51 10.47	2.7161	27 53 36.0	3.730
5	6 53 53.27	2.7104	27 49 46.3	3.927
6	6 56 35.72	2.7045	27 45 44.8	4.122
7	6 59 17.81	2.6985	27 41 31.7	4.314
8	7 1 59.54	2.6924	27 37 7.1	4.506
9	7 4 40.90	2.6861	27 32 31.0	4.697
10	7 7 21.87	2.6795	27 27 43.5	4.885
11	7 10 2.44	2.6727	27 22 44.8	5.071
12	7 12 42.60	2.6659	27 17 35.0	5.256
13	7 15 22.35	2.6590	27 12 14.0	5.441
14	7 18 1.68	2.6519	27 6 42.0	5.623
15	7 20 40.58	2.6446	27 0 59.2	5.803
16	7 23 19.04	2.6372	26 55 5.6	5.982
17	7 25 57.06	2.6299	26 49 1.3	6.160
18	7 28 34.63	2.6224	26 42 46.4	6.335
19	7 31 11.74	2.6146	26 36 21.1	6.509
20	7 33 48.38	2.6066	26 29 45.4	6.680
21	7 36 24.53	2.5985	26 22 59.5	6.849
22	7 39 0.20	2.5905	26 16 3.5	7.017
23	7 41 35.39	2.5825	26 8 57.4	7.184
24	7 44 10.10	2.5743	N.26 1 41.9	7.348

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	7 44 10.10	2.5743	N.26 1 41.4	7.348
1	7 46 44.31	2.5659	25 54 15.7	7.509
2	7 49 18.01	2.5574	25 46 40.3	7.670
3	7 51 51.20	2.5489	25 38 55.3	7.829
4	7 54 23.88	2.5404	25 31 0.9	7.986
5	7 56 56.05	2.5317	25 22 57.2	8.139
6	7 59 27.69	2.5230	25 14 44.3	8.291
7	8 1 58.81	2.5142	25 6 22.3	8.441
8	8 4 29.40	2.5055	24 57 51.4	8.589
9	8 6 59.47	2.4967	24 49 11.6	8.735
10	8 9 29.01	2.4877	24 40 23.1	8.880
11	8 11 58.00	2.4787	24 31 26.0	9.023
12	8 14 26.45	2.4697	24 22 20.4	9.163
13	8 16 54.36	2.4607	24 13 6.4	9.301
14	8 19 21.74	2.4517	24 3 44.2	9.437
15	8 21 48.57	2.4426	23 54 14.0	9.570
16	8 24 14.85	2.4334	23 44 35.8	9.702
17	8 26 40.58	2.4243	23 34 49.7	9.832
18	8 29 5.77	2.4152	23 24 55.9	9.960
19	8 31 30.41	2.4061	23 14 54.5	10.087
20	8 33 54.50	2.3969	23 4 45.5	10.211
21	8 36 18.04	2.3878	22 54 29.2	10.333
22	8 38 41.03	2.3787	22 44 5.6	10.453
23	8 41 3.48	2.3696	N.22 33 34.8	10.571

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 43 25.38	2.3604	N.22 22 57.1	10.686
1	8 45 46.73	2.3513	22 12 12.5	10.800
2	8 48 7.54	2.3422	22 1 21.1	10.913
3	8 50 27.80	2.3332	21 50 23.0	11.023
4	8 52 47.52	2.3242	21 39 18.4	11.130
5	8 55 6.70	2.3151	21 28 7.4	11.235
6	8 57 25.33	2.3061	21 16 50.2	11.338
7	8 59 43.42	2.2971	21 5 26.8	11.441
8	9 2 0.98	2.2882	20 53 57.2	11.542
9	9 4 18.01	2.2793	20 42 21.7	11.640
10	9 6 34.50	2.2704	20 30 40.4	11.737
11	9 8 50.46	2.2616	20 18 53.3	11.832
12	9 11 5.89	2.2528	20 7 0.6	11.924
13	9 13 20.80	2.2441	19 55 2.4	12.015
14	9 15 35.19	2.2355	19 42 58.8	12.104
15	9 17 49.06	2.2268	19 30 50.0	12.190
16	9 20 2.41	2.2182	19 18 36.0	12.275
17	9 22 15.25	2.2097	19 6 17.0	12.358
18	9 24 27.58	2.2013	18 53 53.0	12.440
19	9 26 39.41	2.1929	18 41 24.2	12.520
20	9 28 50.73	2.1845	18 28 50.6	12.599
21	9 31 1.55	2.1762	18 16 12.3	12.676
22	9 33 11.88	2.1681	18 3 29.5	12.750
23	9 35 21.72	2.1599	17 50 42.3	12.822
24	9 37 31.07	2.1518	N.17 37 50.8	12.893

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	THURSDAY 25.					SATURDAY 27.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	9 37 31.07	2.1518	N.17 37 50.8	12.893	0	11 13 2.93	1.8624	N. 6 24 54.2	14.654
1	9 39 39.94	2.1439	17 24 55.1	12.963	1	11 14 54.56	1.8585	6 10 14.7	14.663
2	9 41 48.34	2.1360	17 11 55.2	13.032	2	11 16 45.95	1.8547	5 55 34.7	14.671
3	9 43 56.26	2.1281	16 58 51.3	13.098	3	11 18 37.12	1.8510	5 40 54.2	14.678
4	9 46 3.71	2.1203	16 45 43.5	13.163	4	11 20 28.07	1.8474	5 26 13.3	14.683
5	9 48 10.70	2.1126	16 32 31.8	13.226	5	11 22 18.81	1.8440	5 11 32.2	14.687
6	9 50 17.23	2.1050	16 19 16.4	13.288	6	11 24 9.35	1.8406	4 56 50.9	14.691
7	9 52 23.30	2.0974	16 5 57.3	13.348	7	11 25 59.69	1.8373	4 42 9.3	14.695
8	9 54 28.92	2.0900	15 52 34.7	13.406	8	11 27 49.83	1.8342	4 27 27.5	14.697
9	9 56 34.10	2.0826	15 39 8.7	13.462	9	11 29 39.79	1.8311	4 12 45.7	14.698
10	9 58 38.84	2.0753	15 25 39.3	13.517	10	11 31 29.56	1.8281	3 58 3.8	14.698
11	10 0 43.14	2.0680	15 12 6.6	13.571	11	11 33 19.16	1.8252	3 43 21.9	14.698
12	10 2 47.00	2.0608	14 58 30.8	13.623	12	11 35 8.58	1.8223	3 28 40.0	14.697
13	10 4 50.44	2.0538	14 44 51.9	13.674	13	11 36 57.83	1.8195	3 13 58.2	14.695
14	10 6 53.46	2.0468	14 31 9.9	13.724	14	11 38 46.92	1.8168	2 59 16.6	14.692
15	10 8 56.06	2.0399	14 17 25.0	13.772	15	11 40 35.85	1.8142	2 44 35.2	14.688
16	10 10 58.25	2.0331	14 3 37.3	13.819	16	11 42 24.63	1.8117	2 29 54.0	14.684
17	10 13 0.03	2.0263	13 49 46.8	13.864	17	11 44 13.26	1.8093	2 15 13.1	14.679
18	10 15 1.41	2.0196	13 35 53.7	13.907	18	11 46 1.75	1.8070	2 0 32.6	14.673
19	10 17 2.39	2.0131	13 21 58.0	13.949	19	11 47 50.10	1.8048	1 45 52.4	14.666
20	10 19 2.99	2.0067	13 7 59.8	13.991	20	11 49 38.32	1.8027	1 31 12.7	14.658
21	10 21 3.20	2.0003	12 53 59.1	14.031	21	11 51 26.42	1.8007	1 16 33.5	14.649
22	10 23 3.03	1.9940	12 39 56.1	14.069	22	11 53 14.40	1.7987	1 1 54.8	14.640
23	10 25 2.48	1.9878	N.12 25 50.8	14.106	23	11 55 2.26	1.7968	N. 0 47 16.7	14.630
	FRIDAY 26.					SUNDAY 28.			
0	10 27 1.56	1.9817	N.12 11 43.4	14.141	0	11 56 50.01	1.7949	.N 0 32 39.2	14.619
1	10 29 0.28	1.9757	11 57 33.9	14.176	1	11 58 37.65	1.7932	0 18 2.4	14.608
2	10 30 58.64	1.9698	11 43 22.3	14.210	2	12 0 25.20	1.7916	N. 0 3 26.3	14.596
3	10 32 66.65	1.9639	11 29 8.7	14.243	3	12 2 12.65	1.7901	S. 0 11 9.1	14.583
4	10 34 54.31	1.9581	11 14 53.2	14.273	4	12 4 0.01	1.7886	0 25 43.7	14.570
5	10 36 51.63	1.9525	11 0 36.0	14.301	5	12 5 47.29	1.7873	0 40 17.5	14.556
6	10 38 48.61	1.9470	10 46 17.1	14.329	6	12 7 34.49	1.7860	0 54 50.4	14.540
7	10 40 45.26	1.9415	10 31 56.5	14.357	7	12 9 21.61	1.7848	1 9 22.3	14.524
8	10 42 41.58	1.9361	10 17 34.2	14.384	8	12 11 8.66	1.7837	1 23 53.3	14.508
9	10 44 37.59	1.9308	10 3 10.4	14.410	9	12 12 55.65	1.7827	1 38 23.3	14.491
10	10 46 33.28	1.9256	9 48 45.1	14.434	10	12 14 42.58	1.7817	1 52 52.2	14.473
11	10 48 28.66	1.9205	9 34 18.4	14.456	11	12 16 29.45	1.7808	2 7 20.0	14.455
12	10 50 23.74	1.9155	9 19 50.5	14.477	12	12 18 16.27	1.7799	2 21 46.8	14.437
13	10 52 18.52	1.9105	9 5 21.3	14.498	13	12 20 3.04	1.7792	2 36 12,4	14.417
14	10 54 13.00	1.9056	8 50 50.8	14.517	14	12 21 49.78	1.7787	2 50 36.8	14.395
15	10 56 7.20	1.9008	8 36 19.2	14.536	15	12 23 36.49	1.7782	3 4 59.8	14.373
16	10 58 1.11	1.8961	8 21 46.5	14.553	16	12 25 23.17	1.7777	3 19 21.5	14.351
17	10 59 54.74	1.8915	8 7 12.9	14.569	17	12 27 9.82	1.7773	3 33 41.9	14.329
18	11 1 48.11	1.8872	7 52 38.3	14.585	18	12 28 56.45	1.7771	3 48 1.0	14.306
19	11 3 41.21	1.8827	7 38 2.8	14.599	19	12 30 43.07	1.7769	4 2 18.7	14.282
20	11 5 34.05	1.8786	7 23 26.5	14.612	20	12 32 29.67	1.7767	4 16 34.8	14.256
21	11 7 26.64	1.8744	7 8 49.4	14.624	21	12 34 16.27	1.7767	4 30 49.4	14.230
22	11 9 18.98	1.8703	6 54 11.6	14.635	22	12 36 2.87	1.7767	4 45 2.5	14.205
23	11 11 11.07	1.8663	6 39 33.2	14.645	23	12 37 49.47	1.7767	4 59 14.1	14.179
24	11 13 2.93	1.8624	N. 6 24 54.2	14.654	24	12 39 36.07	1.7768	S. 5 13 24.0	14.152

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 29.					TUESDAY 30.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	12 39 36.07	1.7768	S. 5 13 24.0	14.152	0	13 22 29.33	1.8043	S.10 43 33.5	13.297
1	12 41 22.69	1.7771	5 27 32.2	14.124	1	13 24 17.65	1.8063	10 56 50.0	13.253
2	12 43 9.33	1.7775	5 41 38.8	14.096	2	13 26 6.09	1.8084	11 10 3.9	13.209
3	12 44 55.99	1.7780	5 55 43.7	14.067	3	13 27 54.66	1.8106	11 23 15.1	13.163
4	12 46 42.68	1.7785	6 9 46.8	14.036	4	13 29 43.36	1.8130	11 36 23.5	13.117
5	12 48 29.40	1.7791	6 23 48.0	14.005	5	13 31 32.21	1.8154	11 49 29.1	13.070
6	12 50 16.17	1.7798	6 37 47.4	13.974	6	13 33 21.20	1.8178	12 2 31.9	13.022
7	12 52 2.98	1.7805	6 51 44.9	13.942	7	13 35 10.34	1.8202	12 15 31.8	12.974
8	12 53 49.83	1.7812	7 5 40.5	13.909	8	13 36 59.62	1.8227	12 28 28.8	12.926
9	12 55 36.72	1.7820	7 19 34.0	13.875	9	13 38 49.06	1.8253	12 41 22.9	12.877
10	12 57 23.67	1.7830	7 33 25.5	13.842	10	13 40 38.66	1.8280	12 54 14.0	12.827
11	12 59 10.68	1.7841	7 47 15.0	13.808	11	13 42 28.42	1.8308	13 7 2.1	12.775
12	13 0 57.76	1.7853	8 1 2.5	13.773	12	13 44 18.35	1.8336	13 19 47.0	12.723
13	13 2 44.91	1.7864	8 14 47.8	13.737	13	13 46 8.45	1.8364	13 32 28.8	12.671
14	13 4 32.13	1.7876	8 28 30.9	13.700	14	13 47 58.72	1.8393	13 45 7.5	12.618
15	13 6 19.42	1.7889	8 42 11.8	13.663	15	13 49 49.17	1.8423	13 57 42.9	12.564
16	13 8 6.80	1.7904	8 55 50.5	13.625	16	13 51 39.80	1.8454	14 10 15.1	12.509
17	13 9 54.27	1.7920	9 9 26.8	13.586	17	13 53 30.62	1.8486	14 22 44.0	12.453
18	13 11 41.83	1.7935	9 23 0.8	13.547	18	13 55 21.63	1.8519	14 35 9.5	12.397
19	13 13 29.48	1.7950	9 36 32.5	13.507	19	13 57 12.84	1.8551	14 47 31.7	12.341
20	13 15 17.23	1.7967	9 50 1.7	13.466	20	13 59 4.24	1.8584	14 59 50.4	12.283
21	13 17 5.09	1.7985	10 3 28.4	13.425	21	14 0 55.84	1.8618	15 12 5.6	12.224
22	13 18 53.05	1.8003	10 16 52.7	13.383	22	14 2 47.65	1.8653	15 24 17.3	12.164
23	13 20 41.13	1.8023	10 30 14.4	13.340	23	14 4 39.67	1.8687	15 36 25.4	12.104
24	13 22 29.33	1.8043	S.10 43 33.5	13.297	24	14 6 31.89	1.8722	S.15 48 29.8	12.043

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, ...	7	5	22.8
☾ Last Quarter, ...	14	19	10.3
● New Moon, ...	21	10	3.6
☽ First Quarter	28	16	20.0

	Day.	h.
☾ Apogee, ...	3	22.8
☾ Perigee, ...	19	13.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			P. L. of Diff.	IIIh.			P. L. of Diff.	VIh.			P. L. of Diff.	IXh.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
1	SUN	W.	111	54	9	3386	113	16	41	3393	114	39	5	3401	116	1	20	3409
	Saturn	W.	79	47	43	3069	81	16	31	3075	82	45	11	3082	84	13	43	3088
	Pollux	W.	71	39	11	3009	73	9	13	3016	74	39	6	3023	76	8	50	3029
	Regulus	W.	34	56	7	3019	36	25	56	3026	37	55	37	3031	39	25	11	3037
	Antares	E.	65	5	28	3007	63	35	24	3014	62	5	28	3021	60	35	41	3026
	a Aquilæ	E.	113	15	20	2991	112	3	32	2977	110	51	30	2964	109	39	15	2952
2	SUN	W.	122	50	38	3439	124	12	10	3445	125	33	36	3449	126	54	57	3454
	Saturn	W.	91	34	36	3114	93	2	29	3118	94	30	17	3122	95	58	0	3124
	Pollux	W.	83	35	46	3055	85	4	51	3058	86	33	52	3062	88	2	48	3065
	Regulus	W.	46	51	25	3060	48	20	24	3064	49	49	18	3067	51	18	8	3069
	Antares	E.	53	8	30	3052	51	39	22	3056	50	10	19	3060	48	41	20	3062
	a Aquilæ	E.	103	35	31	2912	102	22	23	2905	101	9	8	2900	99	55	48	2896
3	Saturn	W.	103	15	47	3136	104	43	13	3137	106	10	38	3138	107	38	1	3139
	Pollux	W.	95	26	41	3074	96	55	21	3076	98	24	0	3077	99	52	38	3078
	Regulus	W.	58	41	36	3078	60	10	12	3079	61	38	47	3080	63	7	21	3080
	Antares	E.	41	17	12	3073	39	48	29	3074	38	19	48	3075	36	51	8	3075
	a Aquilæ	E.	93	48	14	2882	92	34	36	2881	91	20	57	2880	90	7	17	2881
	Fomalhaut	E.	121	49	0	3389	120	26	31	3381	119	3	53	3373	117	41	6	3366
4	Saturn	W.	114	54	50	3138	116	22	13	3138	117	49	36	3137	119	17	1	3135
	Pollux	W.	107	15	47	3075	108	44	27	3074	110	13	8	3072	111	41	52	3070
	Regulus	W.	70	30	13	3077	71	58	51	3075	73	27	31	3073	74	56	13	3072
	Spica	W.	16	26	56	3074	17	55	37	3072	19	24	21	3071	20	53	6	3069
	Antares	E.	29	27	46	3073	27	59	3	3071	26	30	18	3069	25	1	31	3067
	a Aquilæ	E.	83	59	15	2891	82	45	46	2896	81	32	21	2900	80	19	1	2905
	Fomalhaut	E.	110	45	7	3332	109	21	33	3325	107	57	51	3320	106	34	3	3314
5	Pollux	W.	119	6	11	3057	120	35	13	3054	122	4	19	3051	123	33	29	3047
	Regulus	W.	82	20	23	3059	83	49	23	3056	85	18	27	3052	86	47	36	3047
	Spica	W.	28	17	36	3055	29	46	41	3052	31	15	50	3047	32	45	4	3044
	a Aquilæ	E.	74	13	56	2944	73	1	21	2955	71	48	57	2967	70	36	45	2980
	Fomalhaut	E.	99	33	28	3288	98	9	3	3283	96	44	32	3278	95	19	55	3273
	a Pegasi	E.	120	43	52	3438	119	22	18	3424	118	0	29	3411	116	38	25	3397
6	Regulus	W.	94	14	35	3026	95	44	15	3022	97	14	1	3017	98	43	53	3012
	Spica	W.	40	12	25	3022	41	42	10	3018	43	12	1	3013	44	41	58	3008
	a Aquilæ	E.	64	39	29	4069	63	28	57	4091	62	18	47	4116	61	9	1	4144
	Fomalhaut	E.	88	15	30	3251	86	50	21	3247	85	25	7	3243	83	59	49	3240
	a Pegasi	E.	109	44	28	3339	108	21	2	3329	106	57	24	3319	105	33	34	3309
7	Regulus	W.	106	14	51	2984	107	45	24	2978	109	16	4	2973	110	46	51	2967
	Spica	W.	52	13	19	2980	53	43	57	2974	55	14	42	2968	56	45	35	2962
	a Aquilæ	E.	55	27	38	4326	54	21	8	4372	53	15	21	4422	52	10	20	4479
	Fomalhaut	E.	76	52	18	3224	75	26	37	3221	74	0	53	3219	72	35	6	3217
	a Pegasi	E.	98	31	46	3265	97	6	54	3258	95	41	53	3251	94	16	44	3243
8	Regulus	W.	118	22	43	2935	119	54	17	2928	121	26	0	2921	122	57	52	2915
	Spica	W.	64	21	56	2930	65	53	37	2923	67	25	27	2916	68	57	25	2909
	Antares	W.	18	27	34	2930	19	59	15	2923	21	31	5	2916	23	3	3	2909
	Fomalhaut	E.	65	25	48	3214	63	59	55	3214	62	34	3	3216	61	8	13	3218
	a Pegasi	E.	87	8	54	3210	85	42	57	3204	84	16	53	3199	82	50	43	3195
	Jupiter	E.	128	45	6	3018	127	15	26	3011	125	45	27	3004	124	15	19	2996
	a Arietis	E.	129	35	51	2988	128	5	23	2978	126	34	43	2969	125	3	51	2961

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^{h.}	P. L. of Diff.	XVIII^{h.}	P. L. of Diff.	XXI^{h.}	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	SUN	W.	117 23 26	3416	118 45 24	3422	120 7 16	3429	121 29 0	3434
	Saturn	W.	85 42 7	3094	87 10 24	3100	88 38 34	3105	90 6 38	3110
	Pollux	W.	77 38 27	3035	79 7 56	3040	80 37 19	3046	82 6 35	3050
	Regulus	W.	40 54 38	3042	42 23 59	3047	43 53 13	3052	45 22 22	3056
	Antares	E.	59 6 1	3033	57 36 29	3038	56 7 3	3043	54 37 44	3047
	α Aquilæ	E.	108 26 49	3943	107 14 13	3933	106 1 27	3925	104 48 33	3918
2	SUN	W.	128 16 13	3457	129 37 25	3462	130 58 32	3465	132 19 35	3467
	Saturn	W.	97 25 40	3128	98 53 16	3130	100 20 49	3133	101 48 19	3134
	Pollux	W.	89 31 41	3068	91 0 30	3070	92 29 16	3072	93 58 0	3074
	Regulus	W.	52 46 55	3071	54 15 40	3074	55 44 21	3077	57 12 59	3078
	Antares	E.	47 12 24	3065	45 43 32	3068	44 14 43	3070	42 45 57	3071
	α Aquilæ	E.	98 42 24	3892	97 28 56	3888	96 15 24	3886	95 1 50	3884
3	Saturn	W.	109 5 23	3139	110 32 45	3140	112 0 6	3139	113 27 28	3139
	Pollux	W.	101 21 15	3078	102 49 52	3078	104 18 29	3077	105 47 7	3075
	Regulus	W.	64 35 55	3081	66 4 28	3080	67 33 2	3079	69 1 37	3078
	Antares	E.	35 22 28	3076	33 53 49	3075	32 25 9	3074	30 56 28	3073
	α Aquilæ	E.	88 53 38	3882	87 40 0	3888	86 26 23	3884	85 12 47	3883
	Fomalhaut	E.	116 18 10	3356	114 55 6	3351	113 31 54	3345	112 8 34	3338
4	Saturn	W.	120 44 28	3133	122 11 57	3133	123 39 27	3131	125 6 59	3129
	Pollux	W.	113 10 38	3069	114 39 26	3065	116 8 18	3063	117 37 13	3060
	Regulus	W.	76 24 57	3070	77 53 43	3067	79 22 33	3065	80 51 26	3061
	Spica	W.	22 21 54	3067	23 50 44	3064	25 19 38	3061	26 48 35	3058
	Antares	E.	23 32 41	3065	22 3 49	3063	20 34 54	3060	19 5 55	3057
	α Aquilæ	E.	79 5 46	3912	77 52 38	3918	76 39 36	3925	75 26 42	3933
	Fomalhaut	E.	105 10 8	3309	103 46 7	3304	102 22 0	3299	100 57 47	3294
5	Pollux	W.	125 2 43	3043	126 32 2	3039	128 1 26	3035	129 30 55	3031
	Regulus	W.	88 16 50	3043	89 46 9	3040	91 15 32	3035	92 45 1	3031
	Spica	W.	34 14 22	3040	35 43 45	3036	37 13 13	3032	38 42 46	3027
	α Aquilæ	E.	69 24 46	3996	68 13 2	4011	67 1 33	4028	65 50 21	4048
	Fomalhaut	E.	93 55 12	3269	92 30 24	3265	91 5 31	3260	89 40 33	3256
	α Pegasi	E.	115 16 5	3384	113 53 30	3372	112 30 42	3361	111 7 41	3351
6	Regulus	W.	100 13 51	3006	101 43 56	3001	103 14 8	2996	104 44 26	2990
	Spica	W.	46 12 1	3003	47 42 10	2997	49 12 26	2992	50 42 49	2986
	α Aquilæ	E.	59 59 42	4175	58 50 52	4207	57 42 33	4243	56 34 47	4282
	Fomalhaut	E.	82 34 27	3236	81 9 0	3233	79 43 30	3230	78 17 56	3226
	α Pegasi	E.	104 9 33	3300	102 45 22	3291	101 21 0	3282	99 56 28	3274
7	Regulus	W.	112 17 45	2961	113 48 47	2954	115 19 58	2947	116 51 17	2942
	Spica	W.	58 16 35	2956	59 47 43	2950	61 18 59	2943	62 50 23	2936
	α Aquilæ	E.	51 6 9	4589	50 2 51	4607	49 0 32	4682	47 59 17	4762
	Fomalhaut	E.	71 9 17	3215	69 43 26	3214	68 17 33	3214	66 51 40	3214
	α Pegasi	E.	92 51 26	3236	91 26 0	3229	90 0 25	3223	88 34 43	3217
8	Regulus	W.	124 29 52	2908	126 2 1	2901	127 34 19	2894	129 6 46	2887
	Spica	W.	70 29 32	2902	72 1 48	2895	73 34 13	2887	75 6 48	2880
	Antares	W.	24 35 10	2902	26 7 26	2894	27 39 52	2887	29 12 27	2880
	Fomalhaut	E.	59 42 25	3222	58 16 40	3225	56 51 0	3229	55 25 25	3235
	α Pegasi	E.	81 24 28	3189	79 58 6	3185	78 31 39	3181	77 5 7	3178
	Jupiter	E.	122 44 51	2988	121 14 23	2981	119 43 46	2973	118 12 59	2965
	α Arietis	E.	123 32 49	2951	122 1 35	2942	120 30 10	2934	118 58 34	2925

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Venus	E.	135 39 37	3059	134 10 37	3052	132 41 29	3045	131 12 12	3039
9	Spica	W.	76 39 32	2873	78 12 25	2866	79 45 28	2858	81 18 41	2849
	Antares	W.	30 45 11	2873	32 18 5	2865	33 51 9	2857	35 24 23	2850
	Fomalhaut	E.	53 59 57	3242	52 34 38	3250	51 9 28	3259	49 44 29	3270
	a Pegasi	E.	75 38 31	3173	74 11 50	3171	72 45 6	3168	71 18 19	3166
	Jupiter	E.	116 42 2	2957	115 10 55	2949	113 39 38	2941	112 8 11	2933
	a Arietis	E.	117 26 47	2916	115 54 49	2907	114 22 39	2898	112 50 18	2889
	Venus	E.	123 43 43	3006	122 13 36	2997	120 43 20	2990	119 12 55	2984
10	Spica	W.	89 7 22	2810	90 41 37	2801	92 16 4	2792	93 50 42	2784
	Antares	W.	43 13 2	2809	44 47 18	2801	46 21 45	2792	47 56 23	2784
	Fomalhaut	E.	42 43 38	3360	41 20 36	3388	39 58 6	3420	38 36 12	3456
	a Pegasi	E.	64 3 58	3164	62 37 6	3166	61 10 16	3168	59 43 29	3173
	Jupiter	E.	104 28 18	2891	102 55 47	2882	101 23 5	2873	99 50 12	2864
	a Arietis	E.	105 5 48	2846	103 32 20	2837	101 58 40	2828	100 24 49	2819
	Venus	E.	111 38 40	2948	110 7 22	2940	108 35 54	2932	107 4 16	2926
11	Spica	W.	101 46 44	2739	103 22 32	2730	104 58 32	2720	106 34 45	2710
	Antares	W.	55 52 24	2738	57 28 13	2729	59 4 14	2720	60 40 27	2711
	a Pegasi	E.	52 31 11	3209	51 5 13	3221	49 39 29	3237	48 14 4	3263
	Jupiter	E.	92 2 51	2818	90 28 47	2808	88 54 30	2799	87 20 1	2789
	a Arietis	E.	92 32 35	2773	90 57 32	2763	89 22 16	2754	87 46 48	2745
	Venus	E.	99 23 42	2886	97 51 5	2877	96 18 17	2869	94 45 18	2861
12	Spica	W.	114 39 6	2661	116 16 38	2650	117 54 25	2640	119 32 26	2629
	Antares	W.	68 44 49	2660	70 22 22	2650	72 0 9	2640	73 38 10	2629
	a Pegasi	E.	41 13 2	3388	39 50 32	3430	38 28 49	3477	37 7 59	3532
	Jupiter	E.	79 24 20	2739	77 48 32	2729	76 12 30	2719	74 36 14	2707
	a Arietis	E.	79 46 19	2696	78 9 34	2687	76 32 36	2676	74 55 24	2666
	Venus	E.	86 57 40	2817	85 23 34	2808	83 49 16	2798	82 14 46	2788
	SUN	E.	124 35 44	3017	123 5 52	3004	121 35 44	2992	120 5 21	2980
13	Antares	W.	81 51 56	2574	83 31 27	2562	85 11 14	2551	86 51 16	2540
	a Aquilæ	W.	43 3 20	4856	44 2 10	4707	45 3 4	4571	46 5 54	4446
	Jupiter	E.	66 31 16	2652	64 53 32	2640	63 15 32	2629	61 37 17	2618
	a Arietis	E.	66 45 58	2615	65 7 24	2604	63 28 35	2594	61 49 32	2584
	Venus	E.	74 19 9	2741	72 43 24	2732	71 7 26	2721	69 31 14	2711
	SUN	E.	112 29 37	2918	110 57 41	2905	109 25 29	2893	107 53 1	2880
14	Antares	W.	95 15 32	2480	96 57 14	2468	98 39 12	2456	100 21 28	2443
	a Aquilæ	W.	51 45 44	3951	52 58 12	3874	54 11 58	3803	55 26 57	3735
	Jupiter	E.	53 22 9	2561	51 42 20	2549	50 2 15	2538	48 21 54	2526
	a Arietis	E.	53 30 49	2534	51 50 23	2525	50 9 44	2515	48 28 52	2506
	Venus	E.	61 26 55	2661	59 49 23	2652	58 11 38	2641	56 33 39	2632
	SUN	E.	100 6 32	2815	98 32 24	2802	96 57 59	2788	95 23 16	2775
15	Antares	W.	108 57 8	2382	110 41 9	2369	112 25 28	2357	114 10 5	2345
	a Aquilæ	W.	61 58 16	3460	63 19 25	3415	64 41 24	3372	66 4 12	3333
	Fomalhaut	W.	31 56 11	3303	33 20 19	3210	34 46 16	3127	36 13 53	3054
	Jupiter	E.	39 56 12	2470	38 14 17	2460	36 32 7	2450	34 49 43	2440
	a Arietis	E.	40 1 34	2468	38 19 36	2462	36 37 30	2458	34 55 18	2455
	Venus	E.	48 20 28	2585	46 41 12	2576	45 1 44	2568	43 22 5	2561
	SUN	E.	87 25 20	2709	85 48 52	2696	84 12 7	2683	82 35 4	2669

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Venus	E.	129 42 47	3032	128 13 14	3025	126 43 32	3018	125 13 42	3011
9	Spica	W.	82 52 5	2842	84 25 39	2834	85 59 23	2826	87 33 17	2818
	Antares	W.	36 57 46	2842	38 31 20	2834	40 5 4	2826	41 38 58	2818
	Fomalhaut	E.	48 19 43	3283	46 55 12	3299	45 30 59	3317	44 7 7	3337
	a Pegasi	E.	69 51 29	3164	68 24 37	3163	66 57 44	3163	65 30 51	3163
	Jupiter	E.	110 36 34	2924	109 4 46	2916	107 32 48	2908	106 0 39	2898
	a Arietis	E.	111 17 47	2881	109 45 4	2873	108 12 10	2864	106 39 5	2855
	Venus	E.	117 42 22	2977	116 11 40	2969	114 40 49	2962	113 9 49	2955
10	Spica	W.	95 25 31	2775	97 0 32	2766	98 35 44	2757	100 11 8	2748
	Antares	W.	49 31 12	2775	51 6 12	2766	52 41 24	2757	54 16 48	2748
	Fomalhaut	E.	37 14 59	3498	35 54 33	3547	34 35 1	3604	33 16 31	3669
	a Pegasi	E.	58 16 48	3177	56 50 11	3183	55 23 42	3190	53 57 21	3199
	Jupiter	E.	98 17 7	2855	96 43 51	2846	95 10 23	2837	93 36 43	2828
	a Arietis	E.	98 50 46	2810	97 16 31	2801	95 42 4	2792	94 7 26	2783
	Venus	E.	105 32 29	2917	104 0 32	2909	102 28 25	2901	100 56 8	2894
11	Spica	W.	108 11 11	2701	109 47 50	2691	111 24 42	2681	113 1 48	2672
	Antares	W.	62 16 52	2701	63 53 31	2690	65 30 24	2681	67 7 30	2671
	a Pegasi	E.	46 48 58	3273	45 24 15	3295	43 59 58	3322	42 36 12	3353
	Jupiter	E.	85 45 19	2779	84 10 24	2769	82 35 16	2760	80 59 55	2749
	a Arietis	E.	86 11 8	2735	84 35 15	2725	82 59 9	2716	81 22 50	2707
	Venus	E.	93 12 9	2852	91 38 49	2843	90 5 17	2835	88 31 34	2826
12	Spica	W.	121 10 42	2618	122 49 12	2607	124 27 57	2596	126 6 57	2585
	Antares	W.	75 16 25	2618	76 54 55	2607	78 33 41	2596	80 12 41	2585
	a Pegasi	E.	35 48 12	3597	34 29 34	3672	33 12 17	3760	31 56 33	3860
	Jupiter	E.	72 59 43	2696	71 22 58	2686	69 45 59	2675	68 8 45	2663
	a Arietis	E.	73 17 58	2655	71 40 18	2646	70 2 25	2636	68 24 18	2626
	Venus	E.	80 40 3	2779	79 5 8	2770	77 30 1	2760	75 54 41	2751
	Sun	E.	118 34 43	2968	117 3 50	2955	115 32 41	2943	114 1 17	2931
13	Antares	W.	88 31 34	2528	90 12 8	2516	91 52 59	2504	93 34 7	2492
	a Aquilæ	W.	47 10 34	4329	48 17 0	4223	49 25 4	4127	50 34 40	4036
	Jupiter	E.	59 58 47	2607	58 20 1	2596	56 41 0	2584	55 1 43	2572
	a Arietis	E.	60 10 15	2574	58 30 44	2564	56 50 59	2554	55 11 1	2544
	Venus	E.	67 54 49	2701	66 18 11	2691	64 41 19	2681	63 4 14	2671
	Sun	E.	106 20 17	2867	104 47 16	2854	103 13 58	2841	101 40 23	2828
14	Antares	W.	102 4 1	2431	103 46 52	2419	105 30 0	2407	107 13 25	2394
	a Aquilæ	W.	56 43 7	3673	58 0 23	3614	59 18 42	3559	60 38 1	3508
	Jupiter	E.	46 41 17	2515	45 0 24	2504	43 19 16	2492	41 37 52	2481
	a Arietis	E.	46 47 47	2497	45 6 30	2489	43 25 2	2482	41 43 23	2475
	Venus	E.	54 55 27	2622	53 17 2	2612	51 38 23	2602	49 59 32	2593
	Sun	E.	93 48 16	2762	92 12 58	2749	90 37 23	2735	89 1 30	2722
15	Antares	W.	115 54 59	2333	117 40 11	2320	119 25 41	2308	121 11 29	2296
	a Aquilæ	W.	67 27 45	3295	68 52 2	3260	70 17 0	3229	71 42 35	3198
	Fomalhaut	W.	37 42 59	2986	39 13 29	2927	40 45 13	2874	42 18 5	2824
	Jupiter	E.	33 7 5	2431	31 24 14	2422	29 41 11	2415	27 57 57	2408
	a Arietis	E.	33 13 2	2454	31 30 44	2454	29 48 26	2458	28 6 13	2463
	Venus	E.	41 42 16	2553	40 2 17	2547	38 22 9	2541	36 41 53	2537
	Sun	E.	80 57 43	2657	79 20 5	2643	77 42 9	2631	76 3 56	2620

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Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	α Aquilæ	W.	73 8 47	3168	74 35 34	3142	76 2 53	3116	77 30 43	3094
	Fomalhaut	W.	43 52 4	2779	45 27 0	2738	47 2 49	2701	48 39 28	2665
	Jupiter	E.	26 14 34	2403	24 31 3	2398	22 47 26	2398	21 3 48	2400
	Venus	E.	35 1 31	2533	33 21 4	2531	31 40 34	2531	30 0 4	2533
	Sun	E.	74 25 27	2607	72 46 41	2593	71 7 37	2582	69 28 17	2570
17	α Aquilæ	W.	84 56 12	3002	86 26 22	2989	87 56 48	2977	89 27 29	2967
	Fomalhaut	W.	56 53 30	2525	58 34 8	2503	60 15 17	2482	61 56 55	2462
	α Pegasi	W.	37 10 16	3027	38 39 55	2954	40 11 5	2888	41 43 39	2839
	Sun	E.	61 7 40	2515	59 26 48	2505	57 45 42	2496	56 4 23	2486
18	α Aquilæ	W.	97 3 17	2945	98 34 39	2946	100 6 0	2948	101 37 18	2954
	Fomalhaut	W.	70 31 25	2384	72 15 23	2372	73 59 38	2361	75 44 9	2350
	α Pegasi	W.	49 43 12	2614	51 21 48	2583	53 1 7	2553	54 41 6	2527
	Sun	E.	47 34 50	2449	45 52 25	2444	44 9 53	2439	42 27 14	2435
19	α Aquilæ	W.	109 11 11	3015	110 41 5	3085	112 10 34	3059	113 39 34	3086
	Fomalhaut	W.	84 29 56	2316	86 15 32	2312	88 1 14	2309	89 46 59	2308
	α Pegasi	W.	63 8 56	2432	64 51 45	2419	66 34 52	2408	68 18 16	2396
	Sun	E.	33 52 57	2429	32 10 3	2432	30 27 14	2437	28 44 32	2443
23	Sun	W.	21 54 6	2709	23 30 34	2711	25 6 59	2716	26 43 18	2724
	Spica	E.	88 42 35	2290	86 56 21	2306	85 10 30	2322	83 25 2	2337
24	Sun	W.	34 41 38	2788	36 16 28	2798	37 50 59	2813	39 25 10	2828
	Spica	E.	74 43 30	2419	73 0 23	2436	71 17 40	2454	69 35 22	2472
	Antares	E.	120 37 53	2419	118 54 46	2436	117 12 3	2454	115 29 45	2472
25	Sun	W.	47 10 48	2913	48 42 50	2931	50 14 30	2948	51 45 48	2966
	Spica	E.	61 9 59	2559	59 30 7	2576	57 50 39	2593	56 11 35	2611
	Antares	E.	107 4 21	2559	105 24 30	2576	103 45 2	2593	102 5 58	2611
26	Sun	W.	59 16 46	3053	60 45 53	3071	62 14 38	3088	63 43 2	3104
	Spica	E.	48 2 8	2696	46 25 23	2718	44 49 0	2729	43 12 59	2744
	Antares	E.	93 56 30	2696	92 19 45	2718	90 43 22	2729	89 7 21	2745
27	Sun	W.	71 0 8	3184	72 26 36	3199	73 52 46	3214	75 18 38	3229
	Regulus	W.	18 52 26	2852	20 25 46	2862	21 58 53	2873	23 31 47	2883
	Spica	E.	35 18 1	2821	33 44 1	2835	32 10 19	2848	30 36 54	2862
	Antares	E.	81 12 22	2821	79 38 21	2835	78 4 39	2849	76 31 15	2862
28	Sun	W.	82 23 51	3295	83 48 8	3307	85 12 11	3319	86 36 0	3331
	Regulus	W.	31 12 47	2938	32 44 18	2948	34 15 36	2958	35 46 42	2967
	Antares	E.	68 48 24	2925	67 16 37	2937	65 45 5	2947	64 13 46	2956
	α Aquilæ	E.	116 20 48	3962	115 8 31	3947	113 55 59	3933	112 43 13	3921
29	Sun	W.	93 32 2	3379	94 54 43	3389	96 17 12	3397	97 39 32	3403
	Regulus	W.	43 19 19	3010	44 49 19	3018	46 19 10	3025	47 48 52	3030
	Antares	E.	56 40 13	3003	55 10 4	3011	53 40 5	3018	52 10 14	3024
	α Aquilæ	E.	106 36 58	3883	105 23 21	3878	104 9 39	3873	102 55 52	3871
30	Sun	W.	104 29 21	3434	105 50 59	3438	107 12 32	3443	108 34 0	3446
	Regulus	W.	55 15 36	3056	56 44 39	3060	58 13 37	3064	59 42 31	3067
	Antares	E.	44 42 54	3052	43 13 45	3056	41 44 41	3060	40 15 42	3063
	α Aquilæ	E.	96 46 21	3862	95 32 23	3862	94 18 25	3862	93 4 27	3862

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	α Aquilæ	W.	78 59 0	3073	80 27 43	3054	81 56 51	3036	83 26 21	3018
	Fomalhaut	W.	50 16 55	2633	51 55 5	2603	53 33 56	2576	55 13 25	2549
	Jupiter	E.	19 20 13	2405	17 36 46	2417	15 53 36	2438	14 10 56	2470
	Venus	E.	28 19 37	2538	26 39 17	2546	24 59 8	2558	23 19 15	2574
	Sun	E.	67 48 41	2559	66 8 49	2547	64 28 41	2536	62 48 18	2525
17	α Aquilæ	W.	90 58 23	2960	92 29 27	2954	94 0 38	2949	95 31 56	2946
	Fomalhaut	W.	63 39 1	2444	65 21 33	2428	67 4 28	2412	68 47 46	2397
	α Pegasi	W.	43 17 29	2778	44 52 26	2730	46 28 26	2687	48 5 23	2649
	Sun	E.	54 22 50	2477	52 41 5	2471	50 59 11	2463	49 17 6	2455
18	α Aquilæ	W.	103 8 28	2962	104 39 29	2971	106 10 20	2982	107 40 55	2997
	Fomalhaut	W.	77 28 55	2342	79 13 54	2333	80 59 5	2326	82 44 26	2320
	α Pegasi	W.	56 21 41	2504	58 2 48	2483	59 44 25	2465	61 26 28	2447
	Sun	E.	40 44 29	2432	39 1 40	2429	37 18 47	2428	35 35 52	2428
19	α Aquilæ	W.	115 8 1	3115	116 35 52	3150	118 3 1	3188	119 29 25	3231
	Fomalhaut	W.	91 32 48	2307	93 18 38	2308	95 4 26	2310	96 50 11	2313
	α Pegasi	W.	70 1 56	2389	71 45 47	2381	73 29 49	2375	75 13 59	2371
	Sun	E.	27 1 58	2451	25 19 36	2464	23 37 32	2479	21 55 49	2494
23	Sun	W.	28 19 26	2733	29 55 22	2744	31 31 4	2756	33 6 30	2769
	Spica	E.	81 39 57	2353	79 55 15	2369	78 10 56	2386	76 27 1	2403
24	Sun	W.	40 59 1	2845	42 32 30	2862	44 5 38	2879	45 38 24	2896
	Spica	E.	67 53 29	2489	66 12 0	2506	64 30 55	2524	62 50 15	2541
	Antares	E.	113 47 52	2489	112 6 23	2506	110 25 18	2523	108 44 37	2541
25	Sun	W.	53 16 43	2984	54 47 16	3001	56 17 28	3018	57 47 18	3036
	Spica	E.	54 32 55	2629	52 54 39	2646	51 16 46	2663	49 39 16	2679
	Antares	E.	100 27 18	2628	98 49 1	2646	97 11 8	2663	95 33 38	2679
26	Sun	W.	65 11 7	3120	66 38 52	3138	68 6 16	3153	69 33 21	3168
	Spica	E.	41 37 18	2761	40 1 59	2776	38 27 0	2792	36 52 21	2806
	Antares	E.	87 31 41	2760	85 56 21	2776	84 21 22	2792	82 46 43	2805
27	Sun	W.	76 44 13	3243	78 9 31	3257	79 34 33	3270	80 59 19	3282
	Regulus	W.	25 4 27	2894	26 36 53	2905	28 9 5	2916	29 41 3	2927
	Spica	E.	29 3 47	2876	27 30 57	2888	25 58 24	2901	24 26 7	2914
	Antares	E.	74 58 8	2876	73 25 18	2888	71 52 44	2901	70 20 26	2913
28	Sun	W.	87 59 36	3341	89 23 0	3352	90 46 11	3362	92 9 11	3370
	Regulus	W.	37 17 36	2977	38 48 18	2985	40 18 49	2994	41 49 9	3002
	Antares	E.	62 42 40	2967	61 11 46	2977	59 41 4	2985	58 10 33	2994
	α Aquilæ	E.	111 30 15	3912	110 17 7	3904	109 3 51	3897	107 50 28	3890
29	Sun	W.	99 1 45	3410	100 23 50	3417	101 45 47	3423	103 7 37	3429
	Regulus	W.	49 18 27	3037	50 47 54	3043	52 17 14	3047	53 46 28	3052
	Antares	E.	50 40 31	3030	49 10 56	3037	47 41 29	3043	46 12 9	3047
	α Aquilæ	E.	101 42 3	3868	100 28 11	3865	99 14 16	3863	98 0 19	3862
30	Sun	W.	109 55 25	3449	111 16 46	3452	112 38 4	3454	113 59 19	3457
	Regulus	W.	61 11 21	3069	62 40 8	3072	64 8 52	3073	65 37 34	3075
	Antares	E.	38 46 47	3066	37 17 55	3067	35 49 5	3069	34 20 17	3071
	α Aquilæ	E.	91 50 29	3864	90 36 33	3866	89 22 39	3869	88 8 48	3871

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semidiameter.	Sidereal Time of the Semidiameter passing the Meridian.	Equation of Time, *to be added to Apparent Time.*	Diff. for 1 hour.
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Wed.	1	6 41 26.88	10.337	N.23 7 3.8	10.24	15 46.15	68.78	3 29.83	0.480
Thur.	2	6 45 34.87	10.325	23 2 45.9	11.25	15 46.16	68.74	3 41.23	0.468
Fri.	3	6 49 42.55	10.313	22 58 3.8	12.25	15 46.17	68.70	3 52.32	0.456
Sat.	4	6 53 49.91	10.299	22 52 57.8	13.24	15 46.17	68.66	4 3.09	0.442
Sun.	5	6 57 56.95	10.283	22 47 28.0	14.23	15 46.19	68.61	4 13.54	0.428
Mon.	6	7 2 3.67	10.270	22 41 34.5	15.22	15 46.21	68.56	4 23.66	0.414
Tues.	7	7 6 10.02	10.255	22 35 17.3	16.20	15 46.23	68.51	4 33.42	0.399
Wed.	8	7 10 15.98	10.239	22 28 36.8	17.17	15 46.25	68.46	4 42.80	0.383
Thur.	9	7 14 21.56	10.223	22 21 33.0	18.14	15 46.27	68.41	4 51.80	0.367
Fri.	10	7 18 26.74	10.206	22 14 5.9	19.10	15 46.29	68.35	5 0.41	0.350
Sat.	11	7 22 31.51	10.189	22 6 16.0	20.05	15 46.32	68.29	5 8.60	0.332
Sun.	12	7 26 35.85	10.171	21 58 3.3	21.00	15 46.36	68.23	5 16.36	0.314
Mon.	13	7 30 39.76	10.152	21 49 27.9	21.94	15 46.40	68.16	5 23.69	0.296
Tues.	14	7 34 43.20	10.133	21 40 30.1	22.87	15 46.45	68.09	5 30.56	0.277
Wed.	15	7 38 46.18	10.113	21 31 9.9	23.79	15 46.51	68.02	5 36.96	0.257
Thur.	16	7 42 48.68	10.093	21 21 27.7	24.71	15 46.57	67.95	5 42.88	0.237
Fri.	17	7 46 50.68	10.072	21 11 23.8	25.61	15 46.63	67.88	5 48.31	0.216
Sat.	18	7 50 52.17	10.051	21 0 58.3	26.51	15 46.69	67.80	5 53.22	0.194
Sun.	19	7 54 53.15	10.029	20 50 11.2	27.40	15 46.75	67.72	5 57.62	0.171
Mon.	20	7 58 53.56	10.006	20 39 2.8	28.28	15 46.82	67.63	6 1.46	0.148
Tues.	21	8 2 53.39	9.982	20 27 33.6	29.14	15 46.90	67.55	6 4.74	0.125
Wed.	22	8 6 52.67	9.959	20 15 43.8	30.00	15 46.99	67.47	6 7.46	0.102
Thur.	23	8 10 51.39	9.935	20 3 33.6	30.84	15 47.08	67.39	6 9.62	0.079
Fri.	24	8 14 49.55	9.911	19 51 3.3	31.67	15 47.18	67.31	6 11.23	0.055
Sat.	25	8 18 47.14	9.887	19 38 13.2	32.49	15 47.29	67.23	6 12.26	0.030
Sun.	26	8 22 44.11	9.861	19 25 3.5	33.30	15 47.40	67.15	6 12.67	0.004
Mon.	27	8 26 40.46	9.835	19 11 34.5	34.10	15 47.51	67.07	6 12.45	0.022
Tues.	28	8 30 36.17	9.809	18 57 46.6	34.89	15 47.62	66.99	6 11.61	0.048
Wed.	29	8 34 31.26	9.783	18 43 40.0	35.66	15 47.74	66.90	6 10.14	0.073
Thur.	30	8 38 25.73	9.757	18 29 14.9	36.42	15 47.87	66.82	6 8.06	0.099
Fri.	31	8 42 19.57	9.731	18 14 31.7	37.17	15 48.00	66.74	6 5.37	0.125
Sat.	32	8 46 12.80	9.705	N.17 59 30.8	37.90	15 48.13	66.65	6 2.05	0.151

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	Equation of Time, *to be subtracted from Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Wed.	1	6 41 26.27	10.337	N.23 7 4.4	10.24	3 29.80	0.480	6 37 56.47
Thur.	2	6 45 34.23	10.325	23 2 46.6	11.25	3 41.20	0.468	6 41 53.03
Fri.	3	6 49 41.88	10.313	22 58 4.6	12.25	3 52.29	0.456	6 45 49.59
Sat.	4	6 53 49.21	10.299	22 52 58.7	13.24	4 3.06	0.442	6 49 46.15
Sun.	5	6 57 56.22	10.285	22 47 29.0	14.23	4 13.51	0.428	6 53 42.71
Mon.	6	7 2 2.91	10.270	22 41 35.6	15.22	4 23.63	0.414	6 57 39.28
Tues.	7	7 6 9.23	10.255	22 35 18.6	16.20	4 33.39	0.399	7 1 35.84
Wed.	8	7 10 15.17	10.239	22 28 38.2	17.17	4 42.77	0.383	7 5 32.40
Thur.	9	7 14 20.73	10.223	22 21 34.5	18.14	4 51.77	0.367	7 9 28.96
Fri.	10	7 18 25.89	10.206	22 14 7.6	19.10	5 0.38	0.350	7 13 25.51
Sat.	11	7 22 30.64	10.189	22 6 17.8	20.05	5 8.57	0.332	7 17 22.07
Sun.	12	7 26 34.96	10.171	21 58 5.2	21.00	5 16.33	0.314	7 21 18.63
Mon.	13	7 30 38.85	10.152	21 49 29.9	21.94	5 23.66	0.296	7 25 15.19
Tues.	14	7 34 42.27	10.133	21 40 32.2	22.87	5 30.53	0.277	7 29 11.74
Wed.	15	7 38 45.23	10.113	21 31 12.2	23.79	5 36.93	0.257	7 33 8.30
Thur.	16	7 42 47.71	10.093	21 21 30.1	24.71	5 42.85	0.237	7 37 4.86
Fri.	17	7 46 49.70	10.072	21 11 26.3	25.61	5 48.28	0.216	7 41 1.42
Sat.	18	7 50 51.18	10.051	21 1 0.9	26.51	5 53.20	0.194	7 44 57.98
Sun.	19	7 54 52.14	10.029	20 50 13.9	27.40	5 57.60	0.171	7 48 54.54
Mon.	20	7 58 52.53	10.004	20 39 5.7	28.28	6 1.44	0.148	7 52 51.09
Tues.	21	8 2 52.37	9.982	20 27 36.6	29.14	6 4.72	0.125	7 56 47.65
Wed.	22	8 6 51.65	9.959	20 15 46.9	30.00	6 7.44	0.102	8 0 44.21
Thur.	23	8 10 50.37	9.935	20 3 36.8	30.84	6 9.61	0.079	8 4 40.76
Fri.	24	8 14 48.54	9.911	19 51 6.6	31.67	6 11.22	0.055	8 8 37.32
Sat.	25	8 18 46.12	9.887	19 38 16.5	32.49	6 12.25	0.030	8 12 33.87
Sun.	26	8 22 43.09	9.861	19 25 6.9	33.30	6 12.66	0.004	8 16 30.43
Mon.	27	8 26 39.44	9.835	19 11 38.0	34.10	6 12.45	0.022	8 20 26.99
Tues.	28	8 30 35.16	9.809	18 57 50.2	34.88	6 11.61	0.048	8 24 23.55
Wed.	29	8 34 30.25	9.783	18 43 43.7	35.66	6 10.15	0.073	8 28 20.10
Thur.	30	8 38 24.73	9.757	18 29 18.7	36.42	6 8.07	0.099	8 32 16.66
Fri.	31	8 42 18.59	9.731	18 14 35.6	37.17	6 5.38	0.125	8 36 13.21
Sat.	32	8 46 11.83	9.705	N.17 59 34.7	37.90	6 2.06	0.151	8 40 9.77

Note. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff for 1 hour.	LATITUDE.				
		λ	λ′						
		° ′ ″	′ ″	″	″				h. m. s.
1	182	99 31 30.3	31 5.3	142.97	—0.61		0.0072161	0.2	17 19 12.80
2	183	100 28 41.5	28 16.3	142.96	0.72		.0072147	0.9	17 15 16.89
3	184	101 25 52.5	25 27.1	142.95	0.80		.0072116	1.6	17 11 20.98
4	185	102 23 3.3	22 37.7	142.94	0.86		.0072069	2.8	17 7 25.06
5	186	103 20 14.0	19 48.2	142.94	0.87		.0072007	2.9	17 3 29.14
6	187	104 17 24.6	16 58.6	142.94	0.87		.0071929	3.6	16 59 33.23
7	188	105 14 35.4	14 9.2	142.95	0.84		.0071836	4.2	16 55 37.32
8	189	106 11 46.4	11 20.0	142.96	0.78		.0071729	4.8	16 51 41.41
9	190	107 8 57.6	8 31.0	142.97	0.69		.0071608	5.4	16 47 45.50
10	191	108 6 9.2	5 42.4	142.99	0.58		.0071472	6.0	16 43 49.59
11	192	109 3 21.3	2 54.3	143.01	0.45		.0071320	6.7	16 39 53.68
12	193	110 0 33.9	0 6.7	143.03	0.32		.0071152	7.4	16 35 57.76
13	194	110 57 47.1	57 19.7	143.06	0.17		.0070966	8.2	16 32 1.85
14	195	111 55 0.9	54 33.4	143.09	—0.05		.0070759	9.1	16 28 5.93
15	196	112 52 15.4	51 47.7	143.12	+0.06		.0070531	9.9	16 24 10.01
16	197	113 49 30.6	49 2.8	143.15	0.17		.0070283	10.8	16 20 14.10
17	198	114 46 46.6	46 18.6	143.18	0.25		.0070013	11.8	16 16 18.19
18	199	115 44 3.3	43 35.2	143.21	0.29		.0069719	12.8	16 12 22.28
19	200	116 41 20.7	40 52.3	143.23	0.31		.0069401	13.8	16 8 26.37
20	201	117 38 38.6	38 10.0	143.26	0.30		.0069057	14.8	16 4 30.46
21	202	118 35 57.2	35 28.5	143.29	0.26		.0068688	15.9	16 0 34.55
22	203	119 33 16.6	32 47.8	143.32	0.19		.0068294	17.0	15 56 38.64
23	204	120 30 36.6	30 7.6	143.34	+0.09		.0067873	18.0	15 52 42.73
24	205	121 27 57.1	27 27.9	143.36	—0.03		.0067428	19.0	15 48 46.82
25	206	122 25 18.1	24 48.7	143.38	0.14		.0066959	20.0	15 44 50.91
26	207	123 22 39.6	22 10.0	143.41	0.27		.0066466	21.0	15 40 55.00
27	208	124 20 1.6	19 31.8	143.43	0.40		.0065951	21.9	15 36 59.09
28	209	125 17 24.2	16 54.3	143.45	0.52		.0065414	22.8	15 33 3.18
29	210	126 14 47.3	14 17.2	143.47	0.63		.0064857	23.6	15 29 7.26
30	211	127 12 10.9	11 40.6	143.50	0.70		.0064282	24.3	15 25 11.35
31	212	128 9 35.2	9 4.7	143.52	0.76		.0063692	24.9	15 21 15.44
32	213	129 7 0.1	6 29.4	143.55	—0.80		0.0063085	25.4	15 17 19.53

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	14 47.7	14 47.3	54 11.0	−0.20	54 9.5	−0.02	7 41.9	1.76	9.6
2	14 47.5	14 48.3	54 10.3	+0.16	54 13.2	+0.32	8 26.2	1.91	10.6
3	14 49.6	14 51.5	54 18.2	0.48	54 25.0	0.64	9 13.5	2.05	11.6
4	14 53.8	14 56.5	54 33.4	0.76	54 43.3	0.88	10 4.3	2.17	12.6
5	14 59.5	15 2.8	54 54.5	0.98	55 6.8	1.06	10 57.5	2.25	13.6
6	15 6.4	15 10.2	55 19.9	1.12	55 33.8	1.18	11 52.0	2.26	14.6
7	15 14.1	15 18.1	55 48.1	1.20	56 2.8	1.22	12 46.0	2.21	15.6
8	15 22.2	15 26.3	56 17.7	1.24	56 32.7	1.26	13 38.2	2.13	16.6
9	15 30.4	15 34.5	56 47.8	1.26	57 2.8	1.25	14 28.0	2.03	17.6
10	15 38.6	15 42.6	57 17.7	1.24	57 32.5	1.22	15 15.6	1.95	18.6
11	15 46.5	15 50.4	57 47.0	1.20	58 1.2	1.18	16 1.7	1.92	19.6
12	15 54.2	15 57.8	58 15.0	1.14	58 28.4	1.10	16 47.6	1.93	20.6
13	16 1.3	16 4.7	58 41.4	1.06	58 53.8	1.00	17 34.5	2.01	21.6
14	16 7.9	16 10.8	59 5.4	0.92	59 16.0	0.82	18 24.0	2.13	22.6
15	16 13.3	16 15.5	59 25.5	0.72	59 33.7	0.60	19 17.3	2.32	23.6
16	16 17.3	16 18.6	59 40.3	0.46	59 45.0	+0.30	20 15.3	2.50	24.6
17	16 19.3	16 19.4	59 47.5	+0.12	59 47.7	−0.08	21 17.5	2.63	25.6
18	16 18.8	16 17.4	59 45.4	−0.30	59 40.4	0.54	22 21.7	2.65	26.6
19	16 15.3	16 12.4	59 32.7	0.76	59 22.2	0.98	23 24.9	2.55	27.6
20	16 8.9	16 4.7	59 9.2	1.18	58 53.8	1.38	☌		28.6
21	15 59.9	15 54.6	58 36.3	1.54	58 16.9	1.68	0 24.2	2.36	0.2
22	15 48.9	15 43.1	57 56.1	1.78	57 34.3	1.84	1 18.4	2.15	1.2
23	15 36.9	15 30.8	57 11.9	1.86	56 49.5	1.86	2 7.4	1.95	2.2
24	15 24.8	15 19.0	56 27.4	1.82	56 6.0	1.74	2 52.3	1.81	3.2
25	15 13.5	15 8.4	55 45.8	1.62	55 27.0	1.48	3 34.5	1.73	4.2
26	15 3.7	14 59.6	55 9.9	1.33	54 54.9	1.16	4 15.1	1.68	5.2
27	14 56.1	14 53.3	54 42.1	0.98	54 31.6	0.78	4 55.3	1.70	6.2
28	14 51.1	14 49.6	54 23.6	0.57	54 18.1	−0.36	5 36.9	1.78	7.2
29	14 48.8	14 48.8	54 15.3	−0.14	54 15.0	+0.08	6 20.4	1.87	8.2
30	14 49.4	14 50.7	54 17.2	+0.30	54 21.9	0.50	7 6.5	1.99	9.2
31	14 52.6	14 55.1	54 29.0	0.68	54 38.3	0.86	7 55.9	2.12	10.2
32	14 58.2	15 1.8	54 49.6	+1.02	55 2.7	+1.16	8 48.1	2.22	11.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m
	WEDNESDAY 1.					FRIDAY 3.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	14 6 31.89	1.8718	S.15 48 29.7	12.045	0	15 41 24.90	2.0946	S.24 0 40.5	8.119
1	14 8 24.32	1.8755	16 0 30.5	11.983	1	15 43 30.74	2.0998	24 8 44.6	8.015
2	14 10 16.99	1.8793	16 12 27.5	11.920	2	15 45 36.88	2.1050	24 16 42.4	7.910
3	14 12 9.88	1.8831	16 24 20.7	11.857	3	15 47 43.34	2.1103	24 24 33.8	7.804
4	14 14 3.00	1.8869	16 36 10.1	11.793	4	15 49 50.12	2.1156	24 32 18.8	7.697
5	14 15 56.34	1.8908	16 47 55.7	11.728	5	15 51 57.20	2.1208	24 39 57.3	7.589
6	14 17 49.91	1.8947	16 59 37.5	11.663	6	15 54 4 60	2.1260	24 47 29.3	7.479
7	14 19 43.71	1.8987	17 11 15.3	11.597	7	15 56 12.31	2.1312	24 54 54.8	7.368
8	14 21 37.75	1.9027	17 22 49.1	11.530	8	15 58 20.34	2.1364	25 2 13.6	7.257
9	14 23 32.04	1.9067	17 34 18.8	11.462	9	16 0 28.68	2.1415	25 9 25.7	7.145
10	14 25 26.57	1.9108	17 45 44.4	11.393	10	16 2 37.32	2.1466	25 16 31.0	7.032
11	14 27 21.34	1.9150	17 57 5.9	11.323	11	16 4 46.26	2.1517	25 23 29.5	6.919
12	14 29 16.37	1.9192	18 8 23.3	11.253	12	16 6 55 51	2.1568	25 30 21.2	6.805
13	14 31 11.65	1.9235	18 19 36.4	11.182	13	16 9 5.07	2.1618	25 37 6.0	6.689
14	14 33 7.18	1.9278	18 30 45.2	11.110	14	16 11 14.93	2.1668	25 43 43.8	6.572
15	14 35 2.98	1.9322	18 41 49.6	11.037	15	16 13 25.09	2.1718	25 50 14.5	6.454
16	14 36 59.04	1.9366	18 52 49.6	10.963	16	16 15 35.55	2.1768	25 56 38.1	6.334
17	14 38 55.37	1.9411	19 3 45.1	10.888	17	16 17 46.30	2.1817	26 2 54.5	6.213
18	14 40 51.97	1.9456	19 14 36.0	10.812	18	16 19 57.35	2.1867	26 9 3.7	6.092
19	14 42 48.84	1.9501	19 25 22.4	10.735	19	16 22 8.70	2.1916	26 15 5.6	5.970
20	14 44 45.98	1.9547	19 36 4.1	10.657	20	16 24 20.36	2.1965	26 21 0.2	5.847
21	14 46 43.40	1.9593	19 46 41.2	10.579	21	16 26 32.32	2.2014	26 26 47.5	5.724
22	14 48 41.10	1.9639	19 57 13.7	10.500	22	16 28 44.57	2.2063	26 32 27.3	5.600
23	14 50 39.07	1.9686	S.20 7 41.5	10.420	23	16 30 57.09	2.2111	S.26 37 59.6	5.475
	THURSDAY 2.					SATURDAY 4.			
0	14 52 37.33	1.9733	S.20 18 4.4	10.339	0	16 33 9.89	2.2158	S.26 43 24.5	5.349
1	14 54 35.87	1.9780	20 28 22.4	10.258	1	16 35 22.97	2.2205	26 48 41.8	5.222
2	14 56 34.69	1.9828	20 38 35.4	10.176	2	16 37 36.33	2.2251	26 53 51.4	5.095
3	14 58 33.81	1.9877	20 48 43.4	10.093	3	16 39 49.97	2.2297	26 58 53.3	4.967
4	15 0 33.22	1.9927	20 58 46.4	10.008	4	16 42 3.88	2.2342	27 3 47.4	4.838
5	15 2 32.92	1.9977	21 8 44.3	9.922	5	16 44 18.05	2.2386	27 8 33.7	4.708
6	15 4 32.93	2.0027	21 18 37.0	9.835	6	16 46 32.49	2.2429	27 13 12.1	4.577
7	15 6 33.24	2.0076	21 28 24.5	9.747	7	16 48 47.19	2.2471	27 17 42.7	4.445
8	15 8 33.84	2.0126	21 38 6.7	9.658	8	16 51 2.15	2.2513	27 22 5.3	4.312
9	15 10 34.73	2.0175	21 47 43.6	9.569	9	16 53 17.36	2.2555	27 26 20.0	4.179
10	15 12 35.91	2.0225	21 57 15.2	9.479	10	16 55 32.83	2.2596	27 30 26.7	4.045
11	15 14 37.40	2.0275	22 6 41.3	9.388	11	16 57 48.54	2.2637	27 34 25.2	3.910
12	15 16 39.20	2.0326	22 16 1.9	9.296	12	17 0 4.49	2.2677	27 38 15.6	3.774
13	15 18 41.30	2.0377	22 25 17.1	9.203	13	17 2 20.68	2.2717	27 41 57.9	3.637
14	15 20 43.72	2.0428	22 34 26.6	9.109	14	17 4 37.10	2.2756	27 45 31.9	3.499
15	15 22 46.44	2.0480	22 43 30.4	9.015	15	17 6 53.75	2.2794	27 48 57.5	3.360
16	15 24 49.47	2.0532	22 52 28.5	8.920	16	17 9 10.64	2.2832	27 52 14.7	3.221
17	15 26 52.81	2.0583	23 1 20.8	8.824	17	17 11 27.75	2.2869	27 55 23.6	3.081
18	15 28 56.46	2.0634	23 10 7.3	8.727	18	17 13 45.07	2.2905	27 58 24.2	2.940
19	15 31 0.42	2.0686	23 18 48.0	8.628	19	17 16 2.60	2.2939	28 1 16.5	2.799
20	15 33 4.69	2.0738	23 27 22.7	8.528	20	17 18 20.33	2.2972	28 4 0.2	2.657
21	15 35 9.27	2.0790	23 35 51.3	8.427	21	17 20 38.26	2.3005	28 6 35.2	2.514
22	15 37 14.17	2.0842	23 44 13.8	8.325	22	17 22 56.39	2.3037	28 9 1.7	2.371
23	15 39 19.38	2.0894	23 52 30.2	8.222	23	17 25 14.71	2.3068	28 11 19.6	2.227
24	15 41 24.90	2.0946	S.24 0 40.5	8.119	24	17 27 33.21	2.3099	S.28 13 28.9	2.083

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 27 33.21	2.3099	S.28 13 28.9	2.082
1	17 29 51.89	2.3129	28 15 29.7	1.937
2	17 32 10.74	2.3158	28 17 21.7	1.792
3	17 34 29.76	2.3186	28 19 4.8	1.646
4	17 36 48.96	2.3213	28 20 39.2	1.500
5	17 39 8.32	2.3239	28 22 4.8	1.353
6	17 41 27.84	2.3264	28 23 21.6	1.206
7	17 43 47.50	2.3288	28 24 29.6	1.058
8	17 46 7.29	2.3311	28 25 28.7	0.909
9	17 48 27.22	2.3332	28 26 18.7	0.760
10	17 50 47.27	2.3353	28 26 59.8	0.610
11	17 53 7.44	2.3373	28 27 31.9	0.460
12	17 55 27.73	2.3392	28 27 55.0	0.310
13	17 57 48.13	2.3409	28 28 9.2	0.160
14	18 0 8.64	2.3425	28 28 14.3	0.010
15	18 2 29.24	2.3441	28 28 10.4	0.141
16	18 4 49.93	2.3456	28 27 57.4	0.292
17	18 7 10.69	2.3470	28 27 35.3	0.443
18	18 9 31.54	2.3482	28 27 4.1	0.595
19	18 11 52.46	2.3493	28 26 23.9	0.747
20	18 14 13.45	2.3503	28 25 34.5	0.899
21	18 16 34.49	2.3512	28 24 35.9	1.051
22	18 18 55.59	2.3520	28 23 28.2	1.204
23	18 21 16.73	2.3527	S.28 22 11.3	1.357

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 23 37.91	2.3533	S.28 20 45.2	1.510
1	18 25 59.13	2.3538	28 19 10.0	1.663
2	18 28 20.38	2.3542	28 17 25.6	1.816
3	18 30 41.65	2.3545	28 15 32.0	1.969
4	18 33 2.92	2.3547	28 13 29.2	2.123
5	18 35 24.19	2.3547	28 11 17.2	2.277
6	18 37 45.47	2.3546	28 8 56.0	2.430
7	18 40 6.75	2.3544	28 6 25.7	2.583
8	18 42 28.01	2.3541	28 3 46.2	2.736
9	18 44 49.25	2.3537	28 0 57.4	2.888
10	18 47 10.46	2.3533	27 57 59.5	3.040
11	18 49 31.64	2.3528	27 54 52.5	3.193
12	18 51 52.79	2.3522	27 51 36.3	3.346
13	18 54 13.89	2.3514	27 48 11.0	3.499
14	18 56 34.94	2.3505	27 44 36.6	3.651
15	18 58 55.93	2.3495	27 40 53.0	3.803
16	19 1 16.86	2.3484	27 37 0.2	3.954
17	19 3 37.72	2.3472	27 32 58.4	4.105
18	19 5 58.51	2.3459	27 28 47.7	4.256
19	19 8 19.22	2.3445	27 24 28.0	4.407
20	19 10 39.84	2.3430	27 19 59.2	4.557
21	19 13 0.37	2.3414	27 15 21.2	4.707
22	19 15 20.80	2.3397	27 10 34.1	4.856
23	19 17 41.12	2.3379	27 5 38.1	5.005
24	19 20 1.33	2.3361	S.27 0 33.2	5.154

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	19 20 1.33	2.3361	S.27 0 33.2	5.154
1	19 22 21.44	2.3342	26 55 19.5	5.302
2	19 24 41.43	2.3322	26 49 56.9	5.450
3	19 27 1.29	2.3301	26 44 25.3	5.597
4	19 29 21.02	2.3279	26 38 44.8	5.744
5	19 31 40.62	2.3256	26 32 55.6	5.891
6	19 34 0.08	2.3232	26 26 57.7	6.037
7	19 36 19.40	2.3208	26 20 51.1	6.182
8	19 38 38.57	2.3183	26 14 35.8	6.327
9	19 40 57.58	2.3157	26 8 11.8	6.471
10	19 43 16.43	2.3130	26 1 39.1	6.615
11	19 45 35.12	2.3102	25 54 57.8	6.758
12	19 47 53.65	2.3074	25 48 8.0	6.900
13	19 50 12.01	2.3045	25 41 9.6	7.042
14	19 52 30.19	2.3015	25 34 2.8	7.183
15	19 54 48.20	2.2984	25 26 47.6	7.323
16	19 57 6.02	2.2953	25 19 24.1	7.462
17	19 59 23.65	2.2921	25 11 52.2	7.601
18	20 1 41.09	2.2889	25 4 11.9	7.739
19	20 3 58.35	2.2857	24 56 23.3	7.876
20	20 6 15.41	2.2825	24 48 26.6	8.012
21	20 8 32.27	2.2793	24 40 21.7	8.148
22	20 10 48.93	2.2760	24 32 8.7	8.283
23	20 13 5.38	2.2726	S.24 23 47.6	8.417

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 15 21.63	2.2691	S.24 15 18.6	8.550
1	20 17 37.67	2.2656	24 6 41.6	8.682
2	20 19 53.50	2.2620	23 57 56.7	8.813
3	20 22 9.11	2.2583	23 49 3.9	8.943
4	20 24 24.50	2.2546	23 40 3.3	9.073
5	20 26 39.68	2.2509	23 30 54.9	9.202
6	20 28 54.64	2.2472	23 21 38.9	9.330
7	20 31 9.37	2.2435	23 12 15.2	9.457
8	20 33 23.87	2.2398	23 2 44.0	9.583
9	20 35 38.15	2.2361	22 53 5.3	9.708
10	20 37 52.20	2.2324	22 43 19.1	9.832
11	20 40 6.03	2.2286	22 33 25.4	9.955
12	20 42 19.63	2.2248	22 23 24.4	10.077
13	20 44 33.00	2.2210	22 13 16.2	10.198
14	20 46 46.14	2.2172	22 3 0.9	10.318
15	20 48 59.04	2.2133	21 52 38.4	10.437
16	20 51 11.70	2.2094	21 42 8.7	10.554
17	20 53 24.13	2.2055	21 31 31.9	10.670
18	20 55 36.34	2.2016	21 20 48.2	10.786
19	20 57 48.31	2.1977	21 9 57.6	10.901
20	21 0 0.04	2.1938	20 59 0.2	11.012
21	21 2 11.54	2.1898	20 47 56.0	11.128
22	21 4 22.81	2.1858	20 36 45.0	11.240
23	21 6 33.84	2.1819	20 25 27.3	11.350
24	21 8 44.64	2.1780	S.20 14 3.0	11.459

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	21 8 44.64	2.1780	S.20 14 3.0	11.459
1	21 10 55.21	2.1741	20 2 32.3	11.567
2	21 13 5.54	2.1703	19 50 55.1	11.674
3	21 15 15.64	2.1665	19 39 11.5	11.780
4	21 17 25.51	2.1626	19 27 21.5	11.885
5	21 19 35.15	2.1587	19 15 25.3	11.989
6	21 21 44.55	2.1549	19 3 22.9	12.092
7	21 23 53.73	2.1511	18 51 14.3	12.194
8	21 26 2.69	2.1473	18 38 59.7	12.295
9	21 28 11.41	2.1436	18 26 39.1	12.394
10	21 30 19.90	2.1399	18 14 12.5	12.492
11	21 32 28.18	2.1362	18 1 40.0	12.589
12	21 34 36.23	2.1325	17 49 1.7	12.685
13	21 36 44.06	2.1288	17 36 17.8	12.780
14	21 38 51.68	2.1252	17 23 28.2	12.874
15	21 40 59.09	2.1216	17 10 33.0	12.967
16	21 43 6.28	2.1180	16 57 32.3	13.058
17	21 45 13.26	2.1145	16 44 26.2	13.148
18	21 47 20.03	2.1110	16 31 14.7	13.237
19	21 49 26.59	2.1075	16 17 57.9	13.325
20	21 51 32.95	2.1040	16 4 35.9	13.412
21	21 53 39.11	2.1006	15 51 8.7	13.498
22	21 55 45.06	2.0973	15 37 36.4	13.582
23	21 57 50.81	2.0940	S.15 23 59.0	13.665

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	21 59 56.37	2.0907	S.15 10 16.6	13.747
1	22 2 1.75	2.0874	14 56 29.4	13.828
2	22 4 6.95	2.0842	14 42 37.4	13.907
3	22 6 11.95	2.0811	14 28 40.7	13.985
4	22 8 16.75	2.0780	14 14 39.3	14.062
5	22 10 21.35	2.0750	14 0 33.3	14.138
6	22 12 25.79	2.0721	13 46 22.7	14.213
7	22 14 30.07	2.0694	13 32 7.6	14.287
8	22 16 34.18	2.0668	13 17 48.2	14.360
9	22 18 38.13	2.0643	13 3 24.4	14.432
10	22 20 41.91	2.0617	12 48 56.4	14.502
11	22 22 45.53	2.0592	12 34 24.2	14.571
12	22 24 49.00	2.0567	12 19 47.9	14.639
13	22 26 52.32	2.0542	12 5 7.6	14.705
14	22 28 55.49	2.0517	11 50 23.4	14.770
15	22 30 58.51	2.0492	11 35 35.2	14.834
16	22 33 1.38	2.0468	11 20 43.2	14.897
17	22 35 4.11	2.0445	11 5 47.5	14.959
18	22 37 6.71	2.0422	10 50 48.1	15.020
19	22 39 9.18	2.0400	10 35 45.0	15.080
20	22 41 11.52	2.0379	10 20 38.5	15.138
21	22 43 13.74	2.0359	10 5 28.6	15.195
22	22 45 15.84	2.0340	9 50 15.2	15.251
23	22 47 17.84	2.0322	9 34 58.5	15.306
24	22 49 19.73	2.0305	S. 9 19 38.5	15.360

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 49 19.73	2.0305	S. 9 19 38.5	15.360
1	22 51 21.51	2.0288	9 4 15.4	15.412
2	22 53 23.19	2.0272	8 48 49.2	15.463
3	22 55 24.78	2.0257	8 33 19.9	15.518
4	22 57 26.28	2.0243	8 17 47.7	15.561
5	22 59 27.69	2.0230	8 2 12.6	15.608
6	23 1 29.03	2.0216	7 46 34.7	15.654
7	23 3 30.30	2.0203	7 30 54.0	15.699
8	23 5 31.49	2.0191	7 15 10.7	15.743
9	23 7 32.61	2.0179	6 59 24.8	15.786
10	23 9 33.66	2.0168	6 43 36.3	15.828
11	23 11 34.65	2.0159	6 27 45.3	15.868
12	23 13 35.60	2.0151	6 11 51.9	15.907
13	23 15 36.50	2.0144	5 55 56.3	15.945
14	23 17 37.36	2.0138	5 39 58.5	15.982
15	23 19 38.17	2.0133	5 23 58.5	16.018
16	23 21 38.95	2.0127	5 7 56.3	16.052
17	23 23 39.70	2.0122	4 51 52.2	16.085
18	23 25 40.43	2.0118	4 35 46.2	16.116
19	23 27 41.14	2.0115	4 19 38.4	16.146
20	23 29 41.83	2.0113	4 3 28.8	16.175
21	23 31 42.51	2.0112	3 47 17.4	16.202
22	23 33 43.19	2.0112	3 31 4.4	16.228
23	23 35 43.87	2.0113	S. 3 14 49.9	16.253

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 37 44.56	2.0114	S. 2 58 33.9	16.277
1	23 39 45.25	2.0117	2 42 16.5	16.300
2	23 41 45.96	2.0121	2 25 57.8	16.322
3	23 43 46.70	2.0125	2 9 37.8	16.343
4	23 45 47.47	2.0130	1 53 16.6	16.362
5	23 47 48.28	2.0136	1 36 54.3	16.380
6	23 49 49.12	2.0143	1 20 31.0	16.397
7	23 51 50.00	2.0151	1 4 6.8	16.412
8	23 53 50.93	2.0160	0 47 41.6	16.426
9	23 55 51.91	2.0170	0 31 15.6	16.439
10	23 57 52.95	2.0181	S. 0 14 48.8	16.451
11	23 59 54.06	2.0192	N. 0 1 38.6	16.462
12	0 1 55.25	2.0203	0 18 6.6	16.471
13	0 3 56.51	2.0215	0 34 35.1	16.479
14	0 5 57.85	2.0229	0 51 4.1	16.486
15	0 7 59.28	2.0244	1 7 33.4	16.491
16	0 10 0.79	2.0260	1 24 3.0	16.495
17	0 12 2.40	2.0277	1 40 32.7	16.497
18	0 14 4.12	2.0295	1 57 2.5	16.498
19	0 16 5.95	2.0314	2 13 32.4	16.498
20	0 18 7.90	2.0334	2 30 2.2	16.496
21	0 20 9.97	2.0355	2 46 32.0	16.493
22	0 22 12.16	2.0376	3 3 1.5	16.488
23	0 24 14.48	2.0398	3 19 30.7	16.482
24	0 26 16.94	2.0421	N. 3 35 59.6	16.475

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 26 16.94	2.0421	N. 3 35 59.6	16.475
1	0 28 19.55	2.0446	3 52 28.0	16.467
2	0 30 22.31	2.0472	4 8 55.8	16.458
3	0 32 25.22	2.0498	4 25 23.0	16.447
4	0 34 28.29	2.0525	4 41 49.5	16.435
5	0 36 31.53	2.0553	4 58 15.1	16.421
6	0 38 34.94	2.0582	5 14 39.8	16.405
7	0 40 38.53	2.0612	5 31 3.5	16.387
8	0 42 42.30	2.0643	5 47 26.2	16.368
9	0 44 46.26	2.0675	6 3 47.8	16.348
10	0 46 50.41	2.0708	6 20 8.3	16.327
11	0 48 54.76	2.0742	6 36 27.4	16.305
12	0 50 59.33	2.0777	6 52 45.1	16.283
13	0 53 4.09	2.0812	7 9 1.3	16.259
14	0 55 9.07	2.0849	7 25 16.0	16.233
15	0 57 14.28	2.0887	7 41 29.1	16.205
16	0 59 19.72	2.0926	7 57 40.4	16.175
17	1 1 25.39	2.0965	8 13 49.9	16.143
18	1 3 31.30	2.1005	8 29 57.5	16.109
19	1 5 37.45	2.1046	8 46 3.0	16.074
20	1 7 43.85	2.1088	9 2 6.4	16.038
21	1 9 50.50	2.1131	9 18 7.7	16.001
22	1 11 57.41	2.1175	9 34 6.7	15.962
23	1 14 4.59	2.1220	N. 9 50 3.2	15.922

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 16 12.04	2.1266	N.10 5 57.3	15.880
1	1 18 19.77	2.1312	10 21 48.8	15.837
2	1 20 27.78	2.1359	10 37 37.6	15.792
3	1 22 36.08	2.1407	10 53 23.7	15.745
4	1 24 44.67	2.1456	11 9 7.0	15.697
5	1 26 53.55	2.1506	11 24 47.3	15.647
6	1 29 2.74	2.1557	11 40 24.6	15.596
7	1 31 12.24	2.1609	11 55 58.8	15.543
8	1 33 22.06	2.1662	12 11 29.7	15.488
9	1 35 32.19	2.1716	12 26 57.3	15.431
10	1 37 42.64	2.1771	12 42 21.5	15.372
11	1 39 53.42	2.1827	12 57 42.1	15.311
12	1 42 4.54	2.1883	13 12 58.9	15.249
13	1 44 16.00	2.1940	13 28 12.0	15.185
14	1 46 27.81	2.1997	13 43 21.2	15.121
15	1 48 39.96	2.2055	13 58 26.6	15.055
16	1 50 52.46	2.2114	14 13 28.0	14.988
17	1 53 5.31	2.2173	14 28 25.3	14.919
18	1 55 18.52	2.2233	14 43 18.3	14.848
19	1 57 32.10	2.2294	14 58 7.0	14.775
20	1 59 46.05	2.2356	15 12 51.1	14.700
21	2 2 0.37	2.2419	15 27 30.7	14.623
22	2 4 15.07	2.2483	15 42 5.6	14.544
23	2 6 30.16	2.2547	15 56 35.7	14.462
24	2 8 45.63	2.2612	N.16 11 0.9	14.378

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	2 8 45.63	2.2612	N.16 11 0.9	14.378
1	2 11 1.49	2.2678	16 25 21.1	14.293
2	2 13 17.74	2.2744	16 39 36.2	14.207
3	2 15 34.39	2.2810	16 53 46.1	14.119
4	2 17 51.44	2.2877	17 7 50.7	14.030
5	2 20 8.90	2.2945	17 21 49.8	13.939
6	2 22 26.76	2.3013	17 35 43.5	13.846
7	2 24 45.02	2.3082	17 49 31.6	13.751
8	2 27 3.70	2.3151	18 3 13.8	13.654
9	2 29 22.80	2.3220	18 16 50.1	13.555
10	2 31 42.33	2.3290	18 30 20.4	13.454
11	2 34 2.27	2.3360	18 43 44.6	13.351
12	2 36 22.63	2.3431	18 57 2.7	13.247
13	2 38 43.42	2.3502	19 10 14.6	13.141
14	2 41 4.64	2.3573	19 23 19.9	13.033
15	2 43 26.30	2.3645	19 36 18.6	12.923
16	2 45 48.39	2.3718	19 49 10.7	12.811
17	2 48 10.92	2.3791	20 1 56.0	12.697
18	2 50 33.89	2.3864	20 14 34.5	12.582
19	2 52 57.30	2.3937	20 27 6.0	12.465
20	2 55 21.14	2.4010	20 39 30.3	12.346
21	2 57 45.42	2.4083	20 51 47.4	12.225
22	3 0 10.14	2.4156	21 3 57.1	12.101
23	3 2 35.31	2.4229	N.21 15 59.3	11.975

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 5 0.91	2.4303	N.21 27 53.9	11.847
1	3 7 26.95	2.4377	21 39 40.9	11.718
2	3 9 53.42	2.4451	21 51 20.2	11.587
3	3 12 20.34	2.4525	22 2 51.6	11.454
4	3 14 47.71	2.4599	22 14 15.0	11.319
5	3 17 15.52	2.4672	22 25 30.1	11.183
6	3 19 43.77	2.4745	22 36 36.9	11.045
7	3 22 12.45	2.4818	22 47 35.4	10.905
8	3 24 41.57	2.4891	22 58 25.5	10.763
9	3 27 11.13	2.4963	23 9 7.0	10.619
10	3 29 41.13	2.5035	23 19 39.8	10.473
11	3 32 11.56	2.5108	23 30 3.7	10.325
12	3 34 42.42	2.5180	23 40 18.7	10.176
13	3 37 13.71	2.5251	23 50 24.8	10.025
14	3 39 45.42	2.5322	24 0 21.7	9.872
15	3 42 17.55	2.5392	24 10 9.4	9.717
16	3 44 50.11	2.5461	24 19 47.7	9.561
17	3 47 23.08	2.5529	24 29 16.6	9.403
18	3 49 56.45	2.5597	24 38 36.0	9.243
19	3 52 30.23	2.5664	24 47 45.8	9.081
20	3 55 4.41	2.5730	24 56 45.8	8.917
21	3 57 38.99	2.5796	25 5 35.8	8.752
22	4 0 13.98	2.5861	25 14 15.8	8.585
23	4 2 49.36	2.5926	25 22 45.7	8.417
24	4 5 25.12	2.5990	N.25 31 5.6	8.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	4 5 25.12	2.5990	N.25 31 5.6	8.247
1	4 8 1.25	2.6053	25 39 15.3	8.075
2	4 10 37.75	2.6115	25 47 14.5	7.901
3	4 13 14.62	2.6176	25 55 3.2	7.726
4	4 15 51.86	2.6236	26 2 41.3	7.549
5	4 18 29.45	2.6295	26 10 8.8	7.371
6	4 21 7.38	2.6352	26 17 25.5	7.192
7	4 23 45.66	2.6407	26 24 31.7	7.012
8	4 26 24.27	2.6461	26 31 26.9	6.830
9	4 29 3.20	2.6514	26 38 11.0	6.646
10	4 31 42.45	2.6566	26 44 44.1	6.460
11	4 34 22.00	2.6617	26 51 6.0	6.272
12	4 37 1.85	2.6666	26 57 16.7	6.084
13	4 39 42.00	2.6714	27 3 16.1	5.895
14	4 42 22.43	2.6761	27 9 4.2	5.705
15	4 45 3.14	2.6806	27 14 41.0	5.514
16	4 47 44.11	2.6850	27 20 6.1	5.322
17	4 50 25.33	2.6892	27 25 19.6	5.129
18	4 53 6.79	2.6932	27 30 21.5	4.935
19	4 55 48.49	2.6970	27 35 11.8	4.740
20	4 58 30.41	2.7006	27 39 50.3	4.544
21	5 1 12.55	2.7040	27 44 17.0	4.347
22	5 3 54.90	2.7074	27 48 31.9	4.150
23	5 6 37.45	2.7106	N.27 52 34.8	3.952

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 9 20.19	2.7136	N.27 56 25.8	3.753
1	5 12 3.10	2.7164	28 0 4.9	3.553
2	5 14 46.17	2.7190	28 3 32.0	3.352
3	5 17 29.38	2.7214	28 6 47.0	3.150
4	5 20 12.74	2.7236	28 9 49.6	2.947
5	5 22 56.23	2.7256	28 12 39.9	2.743
6	5 25 39.82	2.7274	28 15 18.0	2.538
7	5 28 23.51	2.7290	28 17 44.1	2.333
8	5 31 7.29	2.7304	28 19 57.9	2.128
9	5 33 51.16	2.7316	28 21 59.4	1.923
10	5 36 35.09	2.7326	28 23 48.6	1.718
11	5 39 19.06	2.7333	28 25 25.5	1.513
12	5 42 3.07	2.7338	28 26 50.0	1.307
13	5 44 47.12	2.7342	28 28 2.3	1.101
14	5 47 31.20	2.7344	28 29 2.3	0.895
15	5 50 15.28	2.7344	28 29 50.0	0.689
16	5 52 59.35	2.7342	28 30 25.3	0.483
17	5 55 43.39	2.7338	28 30 48.2	0.278
18	5 58 27.40	2.7332	28 30 58.7	0.073
19	6 1 11.37	2.7324	28 30 57.0	0.132
20	6 3 55.28	2.7314	28 30 43.0	0.337
21	6 6 39.11	2.7302	28 30 16.7	0.542
22	6 9 22.87	2.7287	28 29 38.0	0.747
23	6 12 6.54	2.7270	28 28 47.1	0.952
24	6 14 50.10	2.7251	N.28 27 44.0	1.156

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 14 50.10	2.7251	N.28 27 44.0	1.156
1	6 17 33.53	2.7230	28 26 28.7	1.359
2	6 20 16.82	2.7206	28 25 1.2	1.561
3	6 22 59.97	2.7180	28 23 21.5	1.763
4	6 25 42.97	2.7153	28 21 29.7	1.964
5	6 28 25.80	2.7124	28 19 25.8	2.165
6	6 31 8.45	2.7093	28 17 9.9	2.365
7	6 33 50.91	2.7060	28 14 42.0	2.564
8	6 36 33.16	2.7025	28 12 2.2	2.762
9	6 39 15.20	2.6988	28 9 10.5	2.959
10	6 41 57.01	2.6949	28 6 6 9	3.155
11	6 44 38.57	2.6909	28 2 51.6	3.351
12	6 47 19.89	2.6867	27 59 24.5	3.546
13	6 50 0.97	2.6823	27 55 45.8	3.740
14	6 52 41.77	2.6778	27 51 55.6	3.933
15	6 55 22.28	2.6731	27 47 53.8	4.125
16	6 58 2.50	2.6682	27 43 40.4	4.316
17	7 0 42.42	2.6631	27 39 15.7	4.506
18	7 3 22.04	2.6578	27 34 39.7	4.693
19	7 6 1.36	2.6523	27 29 52.5	4.879
20	7 8 40.35	2.6467	27 24 54.1	5.064
21	7 11 18.98	2.6409	27 19 44.6	5.248
22	7 13 57.25	2.6349	27 14 24.1	5.431
23	7 16 35.15	2.6287	N.27 8 52.7	5.612

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	7 19 12.69	2.6225	N.27 3 10.4	5.794
1	7 21 49.86	2.6163	26 57 17.4	5.973
2	7 24 26.65	2.6100	26 51 13 8	6.150
3	7 27 3.06	2.6036	26 44 59.6	6.325
4	7 29 39.09	2.5972	26 38 34.9	6.498
5	7 32 14.72	2.5906	26 31 59.9	6.670
6	7 34 49.95	2.5838	26 25 14.7	6.841
7	7 37 24.76	2.5768	26 18 19.3	7.010
8	7 39 59.13	2.5696	26 11 13.9	7.177
9	7 42 33.07	2.5622	26 3 58.4	7.342
10	7 45 6.58	2.5548	25 56 32.9	7.505
11	7 47 39.64	2.5474	25 48 57.6	7.666
12	7 50 12.26	2.5399	25 41 12.9	7.826
13	7 52 44.43	2.5323	25 33 18.6	7.984
14	7 55 16.14	2.5247	25 25 14.9	8.140
15	7 57 47.39	2.5170	25 17 1.8	8.295
16	8 0 18.17	2.5092	25 8 39.3	8.448
17	8 2 48.48	2.5013	25 0 7.8	8.600
18	8 5 18.32	2.4933	24 51 27.2	8 750
19	8 7 47.68	2.4853	24 42 37.7	8 898
20	8 10 16.56	2.4773	24 33 39.5	9.044
21	8 12 44.96	2.4693	24 24 32 7	9.188
22	8 15 12.86	2.4612	24 15 17.3	9.330
23	8 17 40.27	2.4530	24 5 53.4	9.470
24	8 20 7.20	2.4448	N.23 56 21.2	9.607

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 20 7.20	2.4448	N.23 56 21.2	9.607
1	8 22 33.65	2.4365	23 46 40.7	9.742
2	8 24 59.59	2.4282	23 36 52.2	9.875
3	8 27 25.02	2.4198	23 26 55.7	10.006
4	8 29 49.95	2.4114	23 16 51.3	10.135
5	8 32 14.38	2.4030	23 6 39.3	10.263
6	8 34 38.31	2.3946	22 56 19.8	10.390
7	8 37 1.75	2.3862	22 45 52.9	10.516
8	8 39 24.68	2.3778	22 35 18.6	10.640
9	8 41 47.10	2.3694	22 24 36.8	10.762
10	8 44 9.02	2.3610	22 13 47.5	10.882
11	8 46 30.43	2.3526	22 2 51.1	10.998
12	8 48 51.34	2.3442	21 51 47.7	11.112
13	8 51 11.75	2.3358	21 40 37.8	11.224
14	8 53 31.65	2.3274	21 29 21.2	11.334
15	8 55 51.05	2.3190	21 17 58.0	11.442
16	8 58 9.94	2.3107	21 6 28.3	11.549
17	9 0 28.33	2.3024	20 54 52.3	11.654
18	9 2 46.22	2.2941	20 43 10.0	11.757
19	9 5 3.61	2.2859	20 31 21.5	11.858
20	9 7 20.51	2.2777	20 19 27.0	11.958
21	9 9 36.92	2.2695	20 7 26.6	12.056
22	9 11 52.83	2.2613	19 55 20.5	12.152
23	9 14 8.25	2.2531	N.19 43 8.7	12.246

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 16 23.19	2.2449	N.19 30 51.2	12.338
1	9 18 37.64	2.2368	19 18 28.2	12.428
2	9 20 51.61	2.2287	19 5 59.9	12.516
3	9 23 5.09	2.2206	18 53 26.4	12.603
4	9 25 18.09	2.2126	18 40 47.8	12.688
5	9 27 30.61	2.2047	18 28 4.2	12.771
6	9 29 42.66	2.1968	18 15 15.6	12.852
7	9 31 54.24	2.1890	18 2 22.1	12.931
8	9 34 5.36	2.1813	17 49 24.0	13.008
9	9 36 16.01	2.1736	17 36 21.3	13.083
10	9 38 26.19	2.1660	17 23 14.2	13.156
11	9 40 35.92	2.1585	17 10 2.7	13.228
12	9 42 45.20	2.1510	16 56 46.9	13.299
13	9 44 54.04	2.1435	16 43 26.8	13.368
14	9 47 2.43	2.1361	16 30 2.7	13.435
15	9 49 10.37	2.1288	16 16 34.6	13.500
16	9 51 17.87	2.1215	16 3 2.6	13.563
17	9 53 24.94	2.1143	15 49 26.9	13.625
18	9 55 31.58	2.1071	15 35 47.4	13.686
19	9 57 37.80	2.1000	15 22 4.2	13.746
20	9 59 43.60	2.0931	15 8 17.6	13.805
21	10 1 48.98	2.0862	14 54 27.6	13.862
22	10 3 53.94	2.0793	14 40 34.2	13.917
23	10 5 58.49	2.0725	14 26 37.7	13.970
24	10 8 2.63	2.0658	N.14 12 38.1	14.021

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 8 2.63	2.0658	N.14 12 38.1	14.021
1	10 10 6.37	2.0592	13 58 35.4	14.070
2	10 12 9.72	2.0527	13 44 29.7	14.118
3	10 14 12.69	2.0462	13 30 21.2	14.164
4	10 16 15.27	2.0398	13 16 9.9	14.209
5	10 18 17.47	2.0335	13 1 56.0	14.253
6	10 20 19.29	2.0272	12 47 39.5	14.296
7	10 22 20.74	2.0210	12 33 20.4	14.338
8	10 24 21.82	2.0149	12 18 58.9	14.378
9	10 26 22.54	2.0089	12 4 35.2	14.417
10	10 28 22.90	2.0030	11 50 9.2	14.454
11	10 30 22.91	1.9972	11 35 41.1	14.489
12	10 32 22.57	1.9915	11 21 10.8	14.522
13	10 34 21.89	1.9858	11 6 38.5	14.555
14	10 36 20.87	1.9802	10 52 4.2	14.586
15	10 38 19.51	1.9747	10 37 28.2	14.616
16	10 40 17.81	1.9692	10 22 50.4	14.645
17	10 42 15.80	1.9638	10 8 10.9	14.673
18	10 44 13.47	1.9585	9 53 29.7	14.699
19	10 46 10.83	1.9533	9 38 46.9	14.724
20	10 48 7.88	1.9482	9 24 2.7	14.748
21	10 50 4.63	1.9432	9 9 17.2	14.771
22	10 52 1.08	1.9383	8 54 30.3	14.792
23	10 53 57.24	1.9335	N. 8 39 42.2	14.812

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 55 53.12	1.9288	N. 8 24 52.9	14.831
1	10 57 48.73	1.9242	8 10 2.4	14.849
2	10 59 44.06	1.9197	7 55 10.9	14.866
3	11 1 39.11	1.9152	7 40 18.5	14.882
4	11 3 33.88	1.9109	7 25 25.2	14.897
5	11 5 28.40	1.9066	7 10 31.1	14.910
6	11 7 22.67	1.9024	6 55 36.1	14.922
7	11 9 16.68	1.8983	6 40 40.4	14.933
8	11 11 10.45	1.8943	6 25 44.1	14.943
9	11 13 3.99	1.8904	6 10 47.3	14.952
10	11 14 57.29	1.8866	5 55 49.9	14.960
11	11 16 50.36	1.8828	5 40 52.1	14.967
12	11 18 43.21	1.8791	5 25 53.9	14.973
13	11 20 35.85	1.8755	5 10 55.4	14.978
14	11 22 28.27	1.8719	4 55 56.6	14.982
15	11 24 20.47	1.8684	4 40 57.6	14.985
16	11 26 12.46	1.8650	4 25 58.5	14.987
17	11 28 4.25	1.8617	4 10 59.3	14.988
18	11 29 55.86	1.8585	3 56 0.1	14.987
19	11 31 47.28	1.8554	3 41 0.9	14.986
20	11 33 38.52	1.8524	3 26 1.8	14.984
21	11 35 29.58	1.8495	3 11 2.7	14.981
22	11 37 20.46	1.8466	2 56 3.9	14.977
23	11 39 11.18	1.8438	2 41 5.4	14.972
24	11 41 1.73	1.8411	N. 2 26 7.3	14.966

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 25.					**MONDAY 27.**			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	11 41 1.73	1.8411	N. 2 26 7.3	14.966	0	13 7 54.06	1.8090	S. 9 10 15.9	13.763
1	11 42 52.12	1.8385	2 11 9.5	14.959	1	13 9 42.63	1.8102	9 24 0.4	13.720
2	11 44 42.37	1.8360	1 56 12.1	14.952	2	13 11 31.28	1.8115	9 37 42.3	13.676
3	11 46 32.47	1.8337	1 41 15.2	14.944	3	13 13 20.01	1.8129	9 51 21.6	13.632
4	11 48 22.42	1.8315	1 26 18.8	14.935	4	13 15 8.82	1.8144	10 4 58.2	13.587
5	11 50 12.24	1.8293	1 11 23.0	14.925	5	13 16 57.72	1.8159	10 18 32.1	13.541
6	11 52 1.92	1.8271	0 56 27.9	14.914	6	13 18 46.72	1.8175	10 32 3.2	13.495
7	11 53 51.48	1.8250	0 41 33.5	14.902	7	13 20 35.82	1.8191	10 45 31.5	13.449
8	11 55 40.92	1.8230	0 26 39.8	14.890	8	13 22 25.02	1.8208	10 58 57.0	13.402
9	11 57 30.24	1.8210	N. 0 11 46.8	14.877	9	13 24 14.32	1.8226	11 12 19.7	13.354
10	11 59 19.44	1.8192	S. 0 3 5.4	14.863	10	13 26 3.73	1.8244	11 25 39.5	13.306
11	12 1 8.54	1.8175	0 17 56.6	14.848	11	13 27 53.26	1.8263	11 38 56.3	13.257
12	12 2 57.54	1.8159	0 32 46.9	14.832	12	13 29 42 90	1.8283	11 52 10.2	13.207
13	12 4 56.44	1.8143	0 47 36.2	14.815	13	13 31 32.67	1.8304	12 5 21.0	13.156
14	12 6 45.25	1.8128	1 2 24.5	14.797	14	13 33 22.57	1.8326	12 18 28.7	13.104
15	12 8 23.98	1.8114	1 17 11.8	14.779	15	13 35 12.59	1.8349	12 31 33.3	13.051
16	12 10 12.62	1.8101	1 31 58.0	14.760	16	13 37 2.74	1.8372	12 44 34.8	12.997
17	12 12 1.17	1.8088	1 46 43.0	14.740	17	13 38 53.04	1.8395	12 57 33.0	12.943
18	12 13 49.65	1.8076	2 1 26.8	14.719	18	13 40 43.48	1.8419	13 10 28.0	12.888
19	12 15 38.06	1.8065	2 16 9.3	14.698	19	13 42 34.06	1.8444	13 23 19.7	12.833
20	12 17 26.42	1.8055	2 30 50.5	14.676	20	13 44 24.80	1.8469	13 36 8.1	12.778
21	12 19 14.72	1.8046	2 45 30.3	14.653	21	13 46 15.69	1.8495	13 48 53.1	12.722
22	12 21 2.96	1.8037	3 0 8.8	14.629	22	13 48 6.74	1.8521	14 1 34.7	12.765
23	12 22 51.16	1.8029	S. 3 14 45.8	14.605	23	13 49 57.95	1.8548	S. 14 14 12.8	12.607
	SUNDAY 26.					**TUESDAY 28.**			
0	12 24 39.31	1.8022	S. 3 29 21.3	14.580	0	13 51 49.33	1.8576	S. 14 26 47.5	12.548
1	12 26 27.42	1.8016	3 43 55.3	14.554	1	13 53 40.87	1.8605	14 39 28.6	12.488
2	12 28 15.49	1.8011	3 58 27.7	14.527	2	13 55 32.59	1.8635	14 51 56.1	12.428
3	12 30 3.54	1.8007	4 12 58.6	14.499	3	13 57 24.49	1.8665	15 4 10.0	12.367
4	12 31 51.57	1.8003	4 27 27.8	14.471	4	13 59 16.57	1.8696	15 16 30.2	12.306
5	12 33 39.58	1.8000	4 41 55.2	14.442	5	14 1 8.84	1.8727	15 28 46.7	12.244
6	12 35 27.57	1.7997	4 56 20.8	14.412	6	14 3 1.29	1.8758	15 40 59.4	12.181
7	12 37 15.54	1.7995	5 10 44.7	14.382	7	14 4 53.93	1.8790	15 53 8.3	12.117
8	12 39 3.51	1.7995	5 25 6.7	14.351	8	14 6 46.77	1.8822	16 5 13.4	12.053
9	12 40 51.48	1.7996	5 39 26.9	14.320	9	14 8 39.81	1.8855	16 17 14.7	11.988
10	12 42 39.46	1.7998	5 53 45.2	14.288	10	14 10 33.05	1.8889	16 29 12.1	11.922
11	12 44 27.45	1.8000	6 8 1.5	14.255	11	14 12 26.50	1.8924	16 41 5.4	11.855
12	12 46 15.45	1.8002	6 22 15.8	14.222	12	14 14 20.16	1.8960	16 52 54.6	11.787
13	12 48 3.47	1.8005	6 36 28.0	14.188	13	14 16 14.03	1.8996	17 4 39.8	11.719
14	12 49 51.51	1.8008	6 50 38.2	14.153	14	14 18 8.12	1.9032	17 16 20.9	11.650
15	12 51 39.57	1.8012	7 4 46.3	14.117	15	14 20 2.42	1.9069	17 27 57.8	11.580
16	12 53 27.65	1.8017	7 18 52.2	14.080	16	14 21 56.95	1.9107	17 39 30.5	11.509
17	12 55 15.77	1.8023	7 32 55.8	14.043	17	14 23 51.71	1.9145	17 50 58.9	11.438
18	12 57 3.94	1.8030	7 46 57.1	14.005	18	14 25 46.69	1.9183	18 2 23.0	11.366
19	12 58 52.16	1.8038	8 0 56.2	13.966	19	14 27 41.90	1.9222	18 13 42.8	11.293
20	13 0 40.43	1.8048	8 14 52.9	13.927	20	14 29 37.35	1.9261	18 24 58.2	11.219
21	13 2 28.75	1.8058	8 28 47.3	13.887	21	14 31 33.05	1.9301	18 36 9.1	11.145
22	13 4 17.12	1.8068	8 42 39.3	13.846	22	14 33 28.98	1.9342	18 47 15.5	11.070
23	13 6 5.56	1.8079	8 56 28.8	13.805	23	14 35 25.16	1.9383	18 58 17.4	10.994
24	13 7 54.06	1.8090	S. 9 10 15.9	13.763	24	14 37 21.59	1.9425	S. 19 9 14.8	10.917

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 37 21.59	1.9425	S.19 9 14.8	10.917
1	14 39 18.26	1.9467	19 20 7.5	10.839
2	14 41 15.19	1.9509	19 30 55.5	10.761
3	14 43 12.38	1.9552	19 41 38.8	10.682
4	14 45 9.82	1.9595	19 52 17.3	10.602
5	14 47 7.53	1.9639	20 2 51.0	10.521
6	14 49 5.51	1.9683	20 13 19.8	10.439
7	14 51 3.76	1.9727	20 23 43.7	10.356
8	14 53 2.27	1.9772	20 34 2.6	10.273
9	14 55 1.03	1.9817	20 44 16.4	10.189
10	14 57 0.06	1.9863	20 54 25.1	10.104
11	14 58 59.37	1.9909	21 4 28.8	10.018
12	15 0 58.96	1.9956	21 14 27.3	9.932
13	15 2 58.84	2.0003	21 24 20.6	9.845
14	15 4 59.00	2.0050	21 34 8.6	9.757
15	15 6 59.44	2.0098	21 43 51.2	9.668
16	15 9 0.17	2.0146	21 53 28.5	9.577
17	15 11 1.19	2.0194	22 3 0.3	9.485
18	15 13 2.49	2.0242	22 12 26.5	9.392
19	15 15 4.09	2.0291	22 21 47.2	9.298
20	15 17 5.98	2.0340	22 31 2.4	9.204
21	15 19 8.15	2.0389	22 40 11.9	9.109
22	15 21 10.62	2.0438	22 49 15.7	9.013
23	15 23 13.39	2.0487	S.22 58 13.7	8.917

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 25 16.46	2.0537	S.23 7 5.8	8.821
1	15 27 19.82	2.0587	23 15 52.1	8.724
2	15 29 23.48	2.0637	23 24 32.5	8.626
3	15 31 27.45	2.0687	23 33 7.0	8.526
4	15 33 31.72	2.0737	23 41 35.5	8.425
5	15 35 36.29	2.0787	23 49 57.9	8.323
6	15 37 41.16	2.0837	23 58 14.1	8.220
7	15 39 46.32	2.0888	24 6 24.1	8.116
8	15 41 51.79	2.0939	24 14 27.8	8.011
9	15 43 57.58	2.0990	24 22 25.2	7.905
10	15 46 3.67	2.1041	24 30 16.3	7.799
11	15 48 10.06	2.1092	24 38 1.0	7.692
12	15 50 16.75	2.1142	24 45 39.2	7.584
13	15 52 23.75	2.1192	24 53 10.9	7.475
14	15 54 31.05	2.1242	25 0 36.1	7.365
15	15 56 38.65	2.1293	25 7 54.6	7.254
16	15 58 46.56	2.1343	25 15 6.4	7.142
17	16 0 54.77	2.1393	25 22 11.5	7.029
18	16 3 3.29	2.1443	25 29 9.8	6.916
19	16 5 12.10	2.1493	25 36 1.3	6.802
20	16 7 21.21	2.1543	25 42 45.9	6.687
21	16 9 30.63	2.1593	25 49 23.6	6.571
22	16 11 40.35	2.1643	25 55 54.2	6.454
23	16 13 50.36	2.1693	26 2 17.7	6.335
24	16 16 0.67	2.1743	S.26 8 34.1	6.215

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 16 0.67	2.1743	S.26 8 34.1	6.215
1	16 18 11.27	2.1792	26 14 43.4	6.096
2	16 20 22.16	2.1841	26 20 45.5	5.974
3	16 22 33.35	2.1890	26 26 40.3	5.852
4	16 24 44.84	2.1939	26 32 27.7	5.729
5	16 26 56.62	2.1987	26 38 7.7	5.605
6	16 29 8.68	2.2035	26 43 40.3	5.481
7	16 31 21.02	2.2083	26 49 5.4	5.356
8	16 33 33.65	2.2130	26 54 23.0	5.230
9	16 35 46.56	2.2177	26 59 33.0	5.108
10	16 37 59.76	2.2223	27 4 35.3	4.975
11	16 40 13.23	2.2269	27 9 29.9	4.847
12	16 42 26.97	2.2314	27 14 16.7	4.718
13	16 44 40.97	2.2358	27 18 55.7	4.588
14	16 46 55.24	2.2402	27 23 26.9	4.457
15	16 49 9.77	2.2445	27 27 50.3	4.325
16	16 51 24.57	2.2488	27 32 5.8	4.192
17	16 53 39.62	2.2530	27 36 13.2	4.058
18	16 55 54.92	2.2572	27 40 12.6	3.923
19	16 58 10.47	2.2613	27 44 3.8	3.788
20	17 0 26.26	2.2653	27 47 46.9	3.652
21	17 2 42.30	2.2693	27 51 22.0	3.515
22	17 4 58.58	2.2733	27 54 48.8	3.377
23	17 7 15.09	2.2772	S.27 58 7.3	3.239

SATURDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 9 31.83	2.2810	S.28 1 17.5	3.100

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, . .	6	18	43.9
☾ Last Quarter, . .	14	0	56.9
● New Moon, . .	20	18	12.7
☽ First Quarter, .	28	9	13.7

	Day.	h.
☾ Apogee, ...	1	13.5
☾ Perigee, ...	17	7.0
☾ Apogee, ...	29	7.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	SUN	W.	115 20 32	3458	116 41 43	3459	118 2 53	3459	119 24 3	3459
	Regulus	W.	67 6 14	3076	68 34 53	3076	70 3 32	3076	71 32 11	3075
	Spica	W.	13 3 0	3073	14 31 43	3072	16 0 27	3072	17 29 11	3072
	Antares	E.	32 51 33	3072	31 22 49	3072	29 54 5	3072	28 25 21	3071
	a Aquilæ	E.	86 54 57	3874	85 41 11	3878	84 27 29	3882	83 13 51	3886
	Fomalhaut	E.	113 52 44	3350	112 29 30	3345	111 6 10	3339	109 42 44	3334
2	SUN	W.	126 9 58	3454	127 31 13	3452	128 52 30	3450	130 13 50	3447
	Regulus	W.	78 55 46	3068	80 24 35	3065	81 53 28	3062	83 22 24	3058
	Spica	W.	24 53 4	3064	26 21 58	3061	27 50 55	3058	29 19 56	3055
	a Aquilæ	E.	77 7 2	3919	75 54 1	3927	74 41 9	3936	73 28 26	3945
	Fomalhaut	E.	102 44 3	3308	101 20 1	3303	99 55 53	3298	98 31 39	3292
	a Pegasi	E.	123 54 28	3467	122 33 27	3453	121 12 10	3438	119 50 36	3423
3	Regulus	W.	90 48 19	3036	92 17 47	3031	93 47 21	3026	95 17 2	3019
	Spica	W.	36 46 10	3032	38 15 43	3028	39 45 21	3022	41 15 6	3016
	a Aquilæ	E.	67 27 44	4014	66 16 18	4031	65 5 9	4051	63 54 20	4072
	Fomalhaut	E.	91 28 57	3265	90 4 5	3261	88 39 8	3255	87 14 4	3251
	a Pegasi	E.	112 58 46	3358	111 35 41	3345	110 12 21	3333	108 48 48	3321
4	Regulus	W.	102 47 24	2987	104 17 53	2980	105 48 31	2972	107 19 19	2965
	Spica	W.	48 45 50	2981	50 16 23	2976	51 47 6	2969	53 17 58	2961
	a Aquilæ	E.	58 5 58	4211	56 57 42	4246	55 49 59	4285	54 42 53	4330
	Fomalhaut	E.	80 7 19	3225	78 41 40	3221	77 15 56	3216	75 50 6	3212
	a Pegasi	E.	101 47 49	3268	100 23 0	3259	98 58 0	3248	97 32 48	3236
5	Spica	W.	60 54 50	2920	62 26 43	2912	63 58 47	2902	65 31 3	2894
	Antares	W.	15 0 24	2920	16 32 17	2911	18 4 22	2903	19 36 37	2894
	a Aquilæ	E.	49 18 36	4618	48 16 27	4695	47 15 23	4780	46 15 30	4874
	Fomalhaut	E.	68 39 49	3195	67 13 34	3193	65 47 16	3191	64 20 56	3191
	a Pegasi	E.	90 24 1	3193	88 57 44	3186	87 31 17	3177	86 4 40	3169
6	Spica	W.	73 15 12	2849	74 48 36	2839	76 22 13	2830	77 56 2	2821
	Antares	W.	27 20 45	2819	28 54 9	2839	30 27 46	2830	32 1 35	2821
	Fomalhaut	E.	57 9 15	3195	55 43 0	3199	54 16 50	3204	52 50 46	3212
	a Pegasi	E.	78 49 22	3135	77 21 55	3129	75 54 20	3124	74 26 39	3119
	a Arietis	E.	120 49 7	2892	119 16 38	2881	117 43 56	2871	116 11 2	2861
	Jupiter	E.	125 5 13	2925	123 33 26	2914	122 1 25	2905	120 29 12	2894
7	Spica	W.	85 48 5	2774	87 23 7	2765	88 58 21	2756	90 33 47	2746
	Antares	W.	39 53 39	2774	41 28 41	2765	43 3 55	2756	44 39 21	2746
	Fomalhaut	E.	45 43 8	3273	44 18 25	3293	42 54 5	3316	41 30 12	3344
	a Pegasi	E.	67 6 59	3103	65 38 53	3101	64 10 45	3101	62 42 37	3103
	a Arietis	E.	108 23 6	2811	106 48 51	2801	105 14 23	2791	103 39 43	2781
	Jupiter	E.	112 44 54	2815	111 11 24	2835	109 37 41	2825	108 3 46	2815
	Venus	E.	131 42 43	3151	130 15 35	3138	128 48 12	3126	127 20 34	3114
8	Spica	W.	98 34 3	2700	100 10 43	2691	101 47 35	2681	103 24 40	2673
	Antares	W.	52 39 38	2700	54 16 18	2691	55 53 10	2682	57 30 14	2673
	a Arietis	E.	95 43 10	2733	94 7 14	2724	92 31 5	2715	90 54 44	2706
	Jupiter	E.	100 11 0	2768	98 35 50	2758	97 0 27	2749	95 24 52	2740
	Venus	E.	119 58 50	3057	118 29 48	3047	117 0 33	3036	115 31 5	3026
9	Spica	W.	111 33 2	2629	113 1 18	2620	114 39 46	2610	116 18 27	2601
	Antares	W.	65 38 37	2629	67 16 53	2619	68 55 22	2611	70 34 2	2602

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	120 45 13	3460	122 6 22	3458	123 27 33	3457	124 48 45	3456
	Regulus	W.	73 0 51	3074	74 29 32	3073	75 58 14	3071	77 26 59	3069
	Spica	W.	18 57 55	3071	20 26 39	3070	21 55 25	3069	23 24 13	3066
	Antares	E.	26 56 36	3070	25 27 50	3069	23 59 3	3068	22 30 15	3067
	a Aquilæ	E.	82 0 17	3892	80 46 49	3898	79 33 27	3904	78 20 11	3911
	Fomalhaut	E.	108 19 12	3328	106 55 33	3324	105 31 49	3319	104 7 59	3318
2	Sun	W.	131 35 13	3445	132 56 39	3441	134 18 9	3438	135 39 43	3435
	Regulus	W.	84 51 25	3055	86 20 30	3050	87 49 41	3046	89 18 57	3041
	Spica	W.	30 49 1	3052	32 18 10	3047	33 47 24	3043	35 16 44	3038
	a Aquilæ	E.	72 15 52	3957	71 3 30	3970	69 51 21	3983	68 39 25	3999
	Fomalhaut	E.	97 7 18	3288	95 42 52	3282	94 18 20	3276	92 53 41	3272
	a Pegasi	E.	118 28 45	3408	117 6 38	3394	115 44 15	3381	114 21 37	3370
3	Regulus	W.	96 46 51	3014	98 16 47	3007	99 46 51	3001	101 17 3	2993
	Spica	W.	42 44 59	3010	44 14 59	3003	45 45 8	2997	47 15 25	2990
	a Aquilæ	E.	62 43 51	4095	61 33 44	4119	60 24 1	4147	59 14 45	4178
	Fomalhaut	E.	85 48 55	3246	84 23 40	3241	82 58 19	3236	81 32 52	3231
	a Pegasi	E.	107 25 1	3311	106 1 2	3300	104 36 51	3288	103 12 26	3278
4	Regulus	W.	108 50 16	2957	110 21 23	2948	111 52 41	2940	113 24 9	2931
	Spica	W.	54 49 0	2952	56 20 13	2945	57 51 35	2937	59 23 7	2928
	a Aquilæ	E.	53 36 28	4377	52 30 46	4428	51 25 50	4485	50 21 45	4549
	Fomalhaut	E.	74 24 11	3209	72 58 12	3204	71 32 8	3201	70 6 0	3198
	a Pegasi	E.	96 7 24	3230	94 41 50	3220	93 16 4	3211	91 50 8	3202
5	Spica	W.	67 3 30	2885	68 36 8	2876	70 8 58	2867	71 41 59	2858
	Antares	W.	21 9 4	2885	22 41 42	2876	24 14 32	2867	25 47 33	2859
	a Aquilæ	E.	45 16 54	4976	44 19 40	5090	43 23 55	5218	42 29 47	5362
	Fomalhaut	E.	62 54 36	3190	61 28 15	3189	60 1 53	3191	58 35 33	3193
	a Pegasi	E.	84 37 54	3162	83 10 59	3154	81 43 55	3147	80 16 42	3141
6	Spica	W.	79 30 2	2812	81 4 14	2802	82 38 39	2793	84 13 16	2784
	Antares	W.	33 35 35	2811	35 9 48	2802	36 44 13	2793	38 18 50	2784
	Fomalhaut	E.	51 24 51	3220	49 59 5	3229	48 33 30	3242	47 8 10	3257
	a Pegasi	E.	72 58 53	3114	71 31 1	3110	70 3 4	3107	68 35 3	3105
	a Arietis	E.	114 37 54	2851	113 4 33	2841	111 30 58	2831	109 57 9	2821
	Jupiter	E.	118 56 46	2884	117 24 7	2874	115 51 15	2865	114 18 11	2856
7	Spica	W.	92 9 26	2737	93 45 17	2727	95 21 21	2719	96 57 36	2710
	Antares	W.	46 15 0	2737	47 50 51	2728	49 26 54	2718	51 3 10	2709
	Fomalhaut	E.	40 6 51	3375	38 44 6	3412	37 22 3	3455	36 0 49	3505
	a Pegasi	E.	61 14 31	3105	59 46 27	3106	58 18 25	3110	56 50 28	3117
	a Arietis	E.	102 4 50	2771	100 29 44	2761	98 54 25	2752	97 18 54	2742
	Jupiter	E.	106 29 38	2805	104 55 17	2796	103 20 44	2786	101 45 58	2777
	Venus	E.	125 52 42	3102	124 24 35	3091	122 56 14	3079	121 27 39	3068
8	Spica	W.	105 1 56	2664	106 39 24	2655	108 17 4	2646	109 54 57	2637
	Antares	W.	59 7 30	2663	60 44 59	2655	62 22 40	2646	64 0 33	2638
	a Arietis	E.	89 18 11	2697	87 41 27	2688	86 4 31	2679	84 27 22	2671
	Jupiter	E.	93 49 5	2730	92 13 5	2721	90 36 53	2712	89 0 29	2703
	Venus	E.	114 1 25	3016	112 31 32	3006	111 1 25	2995	109 31 6	2985
9	Spica	W.	117 57 20	2593	119 36 24	2585	121 15 40	2577	122 55 7	2569
	Antares	W.	72 12 54	2593	73 51 58	2585	75 31 14	2576	77 10 42	2569

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	*a* Arietis	E.	82 50 1	2662	81 12 29	2653	79 34 46	2645	77 56 51	2637
	Jupiter	E.	87 23 53	2694	85 47 5	2685	84 10 5	2677	82 32 54	2668
	Venus	E.	108 0 35	2976	106 29 52	2966	104 58 57	2957	103 27 50	2947
	Aldebaran	E.	113 38 27	2706	112 1 58	2698	110 25 16	2688	108 48 20	2678
10	Antares	W.	78 50 20	2560	80 30 10	2551	82 10 12	2543	83 50 25	2535
	a Aquilæ	W.	41 11 24	5136	42 6 34	4960	43 4 1	4809	44 3 38	4663
	a Arietis	E.	69 44 34	2597	68 5 35	2589	66 26 25	2582	64 47 5	2574
	Jupiter	E.	74 24 3	2625	72 45 42	2618	71 7 11	2610	69 28 29	2601
	Venus	E.	95 49 22	2903	94 17 7	2894	92 44 41	2886	91 12 4	2877
	Aldebaran	E.	100 40 23	2630	99 2 9	2621	97 23 43	2612	95 45 5	2604
11	Antares	W.	92 14 22	2494	93 55 44	2486	95 37 17	2478	97 19 1	2471
	a Aquilæ	W.	49 29 50	4096	50 39 56	4012	51 51 24	3933	53 4 10	3860
	a Arietis	E.	56 28 4	2541	54 47 48	2536	53 7 24	2530	51 26 52	2525
	Jupiter	E.	61 12 11	2562	59 32 24	2555	57 52 27	2547	56 12 19	2540
	Venus	E.	83 26 20	2836	81 52 39	2828	80 18 48	2821	78 44 48	2814
	Aldebaran	E.	87 29 3	2564	85 49 18	2556	84 9 22	2548	82 29 16	2540
	Sun	E.	128 52 13	2838	127 18 34	2828	125 44 43	2819	124 10 40	2809
12	Antares	W.	105 50 25	2431	107 33 15	2423	109 16 17	2416	110 59 29	2408
	a Aquilæ	W.	59 24 57	3573	60 44 1	3527	62 3 55	3484	63 24 37	3445
	Fomalhaut	W.	29 39 3	3553	30 58 29	3438	32 20 3	3338	33 43 31	3250
	a Arietis	E.	43 2 31	2505	41 21 23	2502	39 40 11	2499	37 58 56	2496
	Jupiter	E.	47 49 13	2507	46 8 7	2499	44 26 52	2494	42 45 29	2487
	Venus	E.	70 52 29	2779	69 17 34	2772	67 42 30	2766	66 7 17	2759
	Aldebaran	E.	74 6 14	2506	72 25 9	2500	70 43 56	2494	69 2 35	2489
	Sun	E.	116 17 22	2764	114 42 7	2756	113 6 40	2747	111 31 2	2738
13	*a* Aquilæ	W.	70 18 17	3285	71 42 46	3259	73 7 45	3236	74 33 12	3213
	Fomalhaut	W.	41 3 10	2941	42 34 37	2898	44 6 59	2858	45 40 12	2821
	a Arietis	E.	29 32 40	2511	27 51 42	2523	26 11 1	2540	24 30 44	2563
	Jupiter	E.	34 16 40	2464	32 34 36	2461	30 52 28	2459	29 10 17	2458
	Venus	E.	58 9 9	2731	56 33 10	2725	54 57 4	2720	53 20 51	2716
	Aldebaran	E.	60 33 54	2464	58 51 50	2460	57 9 40	2456	55 27 25	2454
	Sun	E.	103 30 1	2695	101 53 15	2686	100 16 19	2680	98 39 12	2672
14	*a* Aquilæ	W.	81 46 23	3127	83 14 0	3115	84 41 51	3104	86 9 56	3094
	Fomalhaut	W.	53 36 53	2680	55 14 0	2658	56 51 36	2638	58 29 39	2618
	a Pegasi	W.	34 4 58	3286	35 29 26	3198	36 55 37	3122	38 23 20	3050
	Venus	E.	45 18 33	2702	43 41 56	2701	42 5 18	2701	40 28 39	2702
	Aldebaran	E.	46 55 29	2449	45 13 4	2450	43 30 41	2454	41 48 23	2458
	Sun	E.	90 31 0	2634	88 52 51	2626	87 14 32	2620	85 36 4	2612
15	*a* Aquilæ	W.	93 32 48	3065	95 1 40	3065	96 30 33	3065	97 59 25	3066
	Fomalhaut	W.	66 45 54	2542	68 26 9	2529	70 6 42	2517	71 47 31	2507
	a Pegasi	W.	46 0 22	2807	47 34 41	2771	49 9 47	2738	50 45 37	2708
	Venus	E.	32 26 14	2722	30 50 3	2734	29 14 8	2755	27 38 41	2786
	Aldebaran	E.	33 19 18	2513	31 38 23	2583	29 57 53	2560	28 18 3	2593
	Sun	E.	77 21 24	2580	75 42 2	2574	74 2 32	2569	72 22 54	2564
16	*a* Aquilæ	W.	105 22 31	3102	106 50 38	3116	108 18 28	3131	109 46 0	3148
	Fomalhaut	W.	80 14 53	2466	81 56 54	2460	83 39 4	2455	85 21 21	2450
	a Pegasi	W.	58 53 30	2596	60 32 30	2580	62 11 53	2564	63 51 37	2550
	a Arietis	W.	15 18 14	2663	16 55 43	2595	18 34 45	2535	20 15 10	2483

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	*a* Arietis	E.	76 18 45	2628	74 40 28	2620	73 2 1	2612	71 23 23	2604
	Jupiter	E.	80 55 31	2659	79 17 56	2651	77 40 10	2642	76 2 12	2634
	Venus	E.	101 56 31	2939	100 25 1	2929	98 53 19	2920	97 21 26	2912
	Aldebaran	E.	107 11 11	2669	105 33 49	2658	103 56 13	2649	102 18 24	2640
10	Antares	W.	85 30 49	2527	87 11 25	2518	88 52 13	2510	90 33 12	2502
	a Aquilæ	W.	45 5 17	4522	46 8 50	4400	47 14 11	4290	48 21 13	4188
	a Arietis	E.	63 7 35	2567	61 27 56	2560	59 48 8	2554	58 8 11	2547
	Jupiter	E.	67 49 35	2593	66 10 30	2585	64 31 14	2577	62 51 48	2569
	Venus	E.	89 39 16	2869	88 6 18	2861	86 33 9	2853	84 59 50	2845
	Aldebaran	E.	94 6 16	2596	92 27 15	2587	90 48 2	2579	89 8 38	2571
11	Antares	W.	99 0 55	2462	100 43 1	2455	102 25 18	2447	104 7 46	2439
	a Aquilæ	W.	54 18 10	3793	55 33 19	3732	56 49 32	3675	58 6 46	3622
	a Arietis	E.	49 46 13	2520	48 5 27	2515	46 24 34	2511	44 43 35	2508
	Jupiter	E.	54 32 1	2533	52 51 33	2526	51 10 56	2519	49 30 9	2512
	Venus	E.	77 10 38	2808	75 36 20	2800	74 1 52	2793	72 27 15	2786
	Aldebaran	E.	80 48 59	2533	79 8 32	2526	77 27 55	2520	75 47 9	2513
	Sun	E.	122 36 24	2800	121 1 56	2791	119 27 16	2782	117 52 25	2773
12	Antares	W.	112 42 52	2401	114 26 26	2393	116 10 11	2386	117 54 6	2378
	a Aquilæ	W.	64 46 3	3406	66 8 10	3373	67 30 57	3342	68 54 20	3313
	Fomalhaut	W.	35 8 41	3173	36 35 23	3105	38 3 27	3044	39 32 45	2990
	a Arietis	E.	36 17 37	2496	34 36 18	2497	32 55 1	2499	31 13 47	2504
	Jupiter	E.	41 3 58	2482	39 22 19	2476	37 40 32	2472	35 58 39	2467
	Venus	E.	64 31 55	2753	62 56 25	2747	61 20 47	2741	59 45 1	2736
	Aldebaran	E.	67 21 6	2483	65 39 29	2477	63 57 44	2472	62 15 52	2468
	Sun	E.	109 55 12	2729	108 19 11	2721	106 42 59	2713	105 6 36	2704
13	*a* Aquilæ	W.	75 59 6	3193	77 25 24	3174	78 52 4	3158	80 19 4	3142
	Fomalhaut	W.	47 14 12	2788	48 48 56	2758	50 24 19	2730	52 0 19	2704
	a Arietis	E.	22 50 58	2591	21 11 48	2623	19 33 24	2662	17 55 53	2707
	Jupiter	E.	27 28 5	2458	25 45 53	2460	24 3 44	2465	22 21 41	2472
	Venus	E.	51 44 32	2713	50 8 9	2709	48 31 41	2706	46 55 9	2703
	Aldebaran	E.	53 45 7	2452	52 2 45	2450	50 20 21	2448	48 37 55	2448
	Sun	E.	97 1 55	2664	95 24 27	2656	93 46 48	2649	92 8 59	2641
14	*a* Aquilæ	W.	87 38 13	3085	89 6 41	3078	90 35 17	3073	92 4 0	3069
	Fomalhaut	W.	60 8 9	2601	61 47 3	2584	63 26 20	2569	65 5 57	2555
	a Pegasi	W.	39 52 27	2992	41 22 50	2939	42 54 20	2890	44 26 52	2846
	Venus	E.	38 52 1	2704	37 15 26	2707	35 38 55	2712	34 2 31	2717
	Aldebaran	E.	40 6 11	2464	38 24 7	2472	36 42 15	2483	35 0 37	2496
	Sun	E.	83 57 26	2606	82 18 39	2599	80 39 43	2593	79 0 38	2586
15	*a* Aquilæ	W.	99 28 16	3070	100 57 2	3076	102 25 41	3083	103 54 11	3091
	Fomalhaut	W.	73 28 34	2497	75 9 51	2489	76 51 20	2480	78 33 1	2472
	a Pegasi	W.	52 22 6	2682	53 59 10	2657	55 36 48	2636	57 14 55	2615
	Venus	E.	26 3 55	2827	24 30 2	2879	22 57 16	2942	21 25 50	3018
	Aldebaran	E.	26 39 1	2633	25 0 51	2685	23 23 51	2750	21 48 17	2833
	Sun	E.	70 43 9	2558	69 3 16	2553	67 23 17	2548	65 43 11	2544
16	*a* Aquilæ	W.	111 13 11	3168	112 39 58	3192	114 6 17	3218	115 32 5	3246
	Fomalhaut	W.	87 3 45	2446	88 46 14	2443	90 28 47	2441	92 11 23	2439
	a Pegasi	W.	65 31 41	2536	67 12 2	2526	68 52 39	2516	70 33 30	2507
	a Arietis	W.	21 56 47	2438	23 39 27	2401	25 23 1	2371	27 7 17	2350

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
16	Sun	E.	64 2 59	2540	62 22 42	2537	60 42 20	2534	59 1 54	2531
17	Fomalhaut	W.	93 54 2	2438	95 36 42	2439	97 19 21	2440	99 1 59	2441
	a Pegasi	W.	72 14 34	2499	73 55 49	2493	75 37 12	2487	77 18 44	2481
	a Arietis	W.	28 52 3	2335	30 37 12	2320	32 22 43	2307	34 8 33	2297
	Jupiter	W.	22 43 44	2332	24 28 57	2320	26 14 28	2310	28 0 13	2301
	Sun	E.	50 38 49	2522	48 58 6	2522	47 17 23	2522	45 36 40	2522
18	Fomalhaut	W.	107 34 6	2464	109 16 10	2472	110 58 3	2481	112 39 43	2492
	a Pegasi	W.	85 47 39	2472	87 29 32	2472	89 11 24	2475	90 53 13	2477
	a Arietis	W.	43 0 38	2268	44 47 25	2265	46 34 16	2263	48 21 10	2268
	Jupiter	W.	36 51 21	2280	38 37 50	2279	40 24 20	2279	42 10 51	2279
	Sun	E.	37 13 35	2535	35 33 11	2540	33 52 54	2547	32 12 46	2553
23	Sun	W.	28 33 45	2964	30 4 43	2976	31 35 26	2989	33 5 53	3001
	Spica	E.	53 4 16	2584	51 24 59	2599	49 46 3	2615	48 7 28	2630
	Antares	E.	98 58 45	2585	97 19 29	2599	95 40 33	2615	94 1 58	2630
24	Sun	W.	40 34 1	3070	42 2 47	3085	43 31 15	3099	44 59 26	3114
	Spica	E.	39 59 41	2705	38 23 8	2721	36 46 56	2735	35 11 3	2750
	Antares	E.	85 54 11	2705	84 17 38	2720	82 41 25	2735	81 5 32	2750
25	Sun	W.	52 15 57	3185	53 42 24	3198	55 8 35	3212	56 34 30	3226
	Spica	E.	27 16 20	2820	25 42 18	2834	24 8 34	2847	22 35 7	2860
	Antares	E.	73 10 50	2821	71 36 49	2834	70 3 5	2847	68 29 38	2860
	a Aquilæ	E.	119 53 18	3942	118 40 41	3922	117 27 44	3905	116 14 29	3890
26	Sun	W.	63 40 11	3288	65 4 36	3300	66 28 48	3312	67 52 46	3322
	Antares	E.	60 46 25	2920	59 14 32	2931	57 42 52	2942	56 11 26	2952
	a Aquilæ	E.	110 5 1	3841	108 50 41	3835	107 36 15	3829	106 21 43	3826
27	Sun	W.	74 49 40	3371	76 12 30	3379	77 35 11	3386	78 57 44	3393
	Antares	E.	48 37 20	2997	47 7 4	3006	45 36 58	3014	44 7 2	3020
	a Aquilæ	E.	100 8 32	3821	98 53 52	3822	97 39 13	3824	96 24 36	3826
28	Sun	W.	85 48 30	3423	87 10 20	3427	88 32 6	3431	89 53 47	3435
	Antares	E.	36 39 16	3047	35 10 2	3052	33 40 53	3056	32 11 49	3059
	a Aquilæ	E.	90 12 16	3845	88 58 0	3850	87 43 49	3855	86 29 43	3860
	Fomalhaut	E.	117 20 49	3349	115 57 34	3345	114 34 14	3341	113 10 50	3338
29	Sun	W.	96 41 24	3444	98 2 51	3445	99 24 17	3445	100 45 43	3444
	Spica	W.	21 7 16	3068	22 36 5	3068	24 4 54	3067	25 33 44	3066
	a Aquilæ	E.	80 20 51	3896	79 7 27	3905	77 54 12	3915	76 41 7	3924
	Fomalhaut	E.	106 13 1	3323	104 49 16	3319	103 25 27	3317	102 1 35	3314
30	Sun	W.	107 33 17	3432	108 54 57	3429	110 16 40	3425	111 38 28	3421
	Spica	W.	32 58 16	3056	34 27 19	3053	35 56 26	3049	37 25 38	3044
	a Aquilæ	E.	70 38 22	3984	69 26 27	4000	68 14 47	4015	67 3 22	4032
	Fomalhaut	E.	95 1 14	3294	93 36 56	3290	92 12 33	3287	90 48 6	3282
31	Sun	W.	118 28 54	3391	119 51 21	3385	121 13 55	3378	122 36 37	3369
	Spica	W.	44 53 8	3018	46 22 59	3010	47 52 59	3003	49 23 8	2996
	a Aquilæ	E.	61 11 2	4142	60 1 41	4171	58 52 47	4202	57 44 23	4236
	Fomalhaut	E.	83 44 27	3258	82 19 26	3253	80 54 19	3247	79 29 6	3243
	a Pegasi	E.	105 29 25	3306	104 5 21	3295	102 41 4	3285	101 16 35	3275

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight. ° ′ ″	P. L. of Diff.	XVh. ° ′ ″	P. L. of Diff.	XVIIIh. ° ′ ″	P. L. of Diff.	XXIh. ° ′ ″	P. L. of Diff.
16	Sun	E.	57 21 24	2527	55 40 49	2525	54 0 11	2524	52 19 31	2522
17	Fomalhaut	W.	100 44 35	2444	102 27 7	2448	104 9 33	2453	105 51 53	2458
	a Pegasi	W.	79 0 24	2478	80 42 8	2476	82 23 57	2474	84 5 47	2472
	a Arietis	W.	35 54 37	2289	37 40 53	2281	39 27 20	2275	41 13 56	2271
	Jupiter	W.	29 46 11	2294	31 38 19	2289	33 18 35	2285	35 4 56	2283
	Sun	E.	43 55 57	2523	42 15 16	2525	40 34 38	2528	38 54 4	2532
18	Fomalhaut	W.	114 21 8	2503	116 2 17	2517	117 43 7	2531	119 23 37	2548
	a Pegasi	W.	92 34 58	2482	94 16 37	2487	95 58 9	2493	97 39 32	2500
	a Arietis	W.	50 8 4	2264	51 54 57	2264	53 41 49	2266	55 28 39	2269
	Jupiter	W.	43 57 21	2281	45 43 49	2283	47 30 14	2284	49 16 37	2286
	Sun	E.	30 32 47	2561	28 52 59	2572	27 13 25	2583	25 34 6	2596
23	Sun	W.	34 36 4	3014	36 5 59	3028	37 35 37	3042	39 4 58	3056
	Spica	E.	46 29 14	2645	44 51 20	2660	43 13 47	2675	41 36 34	2690
	Antares	E.	92 23 44	2645	90 45 50	2660	89 8 17	2675	87 31 4	2690
24	Sun	W.	46 27 19	3128	47 54 55	3143	49 22 13	3158	50 49 13	3171
	Spica	E.	33 35 29	2764	32 0 14	2779	30 25 18	2792	28 50 40	2806
	Antares	E.	79 29 58	2764	77 54 43	2779	76 19 47	2792	74 45 9	2807
25	Sun	W.	58 0 8	3239	59 25 31	3252	60 50 39	3265	62 15 32	3276
	Spica	E.	21 1 57	2873	19 29 3	2884	17 56 24	2897	16 24 1	2909
	Antares	E.	66 56 28	2873	65 23 34	2885	63 50 56	2897	62 18 33	2909
	a Aquilæ	E.	115 0 59	3876	113 47 15	3864	112 33 19	3856	111 19 14	3848
26	Sun	W.	69 16 32	3832	70 40 6	3842	72 3 29	3852	73 26 40	3862
	Antares	E.	54 40 13	2963	53 9 12	2972	51 38 24	2981	50 7 47	2989
	a Aquilæ	E.	105 7 8	3824	103 52 31	3822	102 37 52	3822	101 23 13	3822
27	Sun	W.	80 20 9	3400	81 42 25	3408	83 4 33	3413	84 26 35	3419
	Antares	E.	42 37 14	3026	41 7 34	3032	39 38 1	3038	38 8 35	3043
	a Aquilæ	E.	95 10 1	3829	93 55 29	3833	92 41 1	3836	91 26 36	3841
28	Sun	W.	91 15 24	3438	92 36 57	3441	93 58 27	3442	95 19 56	3443
	Antares	E.	30 42 49	3061	29 13 52	3064	27 44 58	3065	26 16 6	3068
	a Aquilæ	E.	85 15 43	3867	84 1 50	3873	82 48 3	3880	81 34 23	3888
	Fomalhaut	E.	111 47 23	3336	110 23 53	3332	109 0 19	3330	107 36 42	3326
29	Sun	W.	102 7 10	3442	103 28 39	3441	104 50 9	3439	106 11 41	3436
	Spica	W.	27 2 35	3065	28 31 27	3064	30 0 20	3062	31 29 16	3059
	a Aquilæ	E.	75 28 12	3934	74 15 27	3945	73 2 53	3957	71 50 31	3970
	Fomalhaut	E.	100 37 40	3310	99 13 40	3306	97 49 36	3302	96 25 27	3299
30	Sun	W.	113 0 21	3415	114 22 20	3411	115 44 24	3406	117 6 35	3398
	Spica	W.	38 54 56	3040	40 24 19	3034	41 53 49	3030	43 23 25	3024
	a Aquilæ	E.	65 52 14	4061	64 41 25	4071	63 30 55	4093	62 20 47	4117
	Fomalhaut	E.	89 23 33	3277	87 58 55	3272	86 34 11	3268	85 9 22	3263
31	Sun	W.	123 59 29	3361	125 22 30	3353	126 45 40	3344	128 9 1	3335
	Spica	W.	50 53 26	2998	52 23 54	2980	53 54 32	2971	55 25 21	2963
	a Aquilæ	E.	56 36 31	4271	55 29 12	4310	54 22 29	4355	53 16 27	4404
	Fomalhaut	E.	78 3 48	3238	76 38 24	3232	75 12 53	3227	73 47 16	3224
	a Pegasi	E.	99 51 55	3264	08 27 1	3254	97 1 56	3243	95 36 38	3233

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be added to*	
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.		*subtracted from Apparent Time.*	Diff. for 1 hour.
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Sat.	1	8 46 12.80	9.705	N.17 59 30.8	37.90	15 48.13	66.65	6 2.05	0.151
Sun.	2	8 50 5.40	9.679	17 44 12.3	38.63	15 48.26	66.56	5 58.09	0.177
Mon.	3	8 53 57.38	9.654	17 28 36.6	39.34	15 48.40	66.47	5 53.52	0.203
Tues.	4	8 57 48.76	9.629	17 12 43.9	40.04	15 48.54	66.38	5 48.35	0.228
Wed.	5	9 1 39.54	9.604	16 56 34.5	40.73	15 48.68	66.29	5 42.58	0.253
Thur.	6	9 5 29.72	9.579	16 40 8.5	41.41	15 48.83	66.20	5 36.22	0.277
Fri.	7	9 9 19.30	9.555	16 23 26.5	42.08	15 48.98	66.12	5 29.26	0.301
Sat.	8	9 13 8.31	9.531	16 6 28.7	42.73	15 49.13	66.03	5 21.73	0.325
Sun.	9	9 16 56.74	9.507	15 49 15.3	43.38	15 49.29	65.94	5 13.64	0.349
Mon.	10	9 20 44.61	9.484	15 31 46.6	44.01	15 49.45	65.86	5 4.98	0.372
Tues.	11	9 24 31.91	9.461	15 14 2.8	44.63	15 49.61	65.78	4 55.76	0.395
Wed.	12	9 28 18.68	9.438	14 56 4.3	45.24	15 49.77	65.70	4 46.00	0.418
Thur.	13	9 32 4.91	9.416	14 37 51.4	45.83	15 49.94	65.62	4 35.71	0.440
Fri.	14	9 35 50.62	9.394	14 19 24.4	46.42	15 50.11	65.54	4 24.89	0.462
Sat.	15	9 39 35.80	9.373	14 0 43.5	46.99	15 50.28	65.46	4 13.55	0.483
Sun.	16	9 43 20.47	9.352	13 41 49.1	47.54	15 50.46	65.38	4 1.69	0.504
Mon.	17	9 47 4.63	9.331	13 22 41.6	48.09	15 50.64	65.31	3 49.33	0.525
Tues.	18	9 50 48.29	9.310	13 3 21.2	48.62	15 50.83	65.24	3 36.47	0.546
Wed.	19	9 54 31.47	9.290	12 43 48.2	49.13	15 51.02	65.17	3 23.12	0.566
Thur.	20	9 58 14.16	9.270	12 24 3.1	49.63	15 51.22	65.10	3 9.30	0.586
Fri.	21	10 1 56.37	9.251	12 4 6.3	50.12	15 51.42	65.03	2 55.00	0.606
Sat.	22	10 5 38.11	9.232	11 43 57.9	50.59	15 51.62	64.96	2 40.22	0.625
Sun.	23	10 9 19.41	9.213	11 23 38.4	51.05	15 51.83	64.90	2 25.01	0.643
Mon.	24	10 13 0.27	9.195	11 3 8.1	51.49	15 52.05	64.84	2 9.35	0.661
Tues.	25	10 16 40.70	9.177	10 42 27.4	51.91	15 52.27	64.78	1 53.26	0.679
Wed.	26	10 20 20.69	9.160	10 21 36.6	52.33	15 52.49	64.72	1 36.75	0.697
Thur.	27	10 24 0.28	9.143	10 0 36.1	52.73	15 52.71	64.66	1 19.83	0.714
Fri.	28	10 27 39.46	9.127	9 39 26.2	53.11	15 52.93	64.61	1 2.51	0.730
Sat.	29	10 31 18.28	9.112	9 18 7.2	53.49	15 53.16	64.56	0 44.81	0.745
Sun.	30	10 34 56.74	9.097	8 56 39.3	53.85	15 53.39	64.51	0 26.76	0.759
Mon.	31	10 38 34.86	9.083	8 35 2.9	54.20	15 53.62	64.46	0 8.37	0.773
Tues.	32	10 42 12.64	9.070	N. 8 13 18.3	54.53	15 53.86	64.41	0 10.33	0.786

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be subtracted from* *added to* *Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Sat.	1	8 46 11.83	9.705	N.17 59 34.7	37.90	6 2.06	0.151	8 40 9.77
Sun.	2	8 50 4.44	9.679	17 44 16.2	38.63	5 58.11	0.177	8 44 6.33
Mon.	3	8 53 56.43	9.654	17 28 40.5	39.34	5 53.54	0.203	8 48 2.89
Tues.	4	8 57 47.82	9.629	17 12 47.8	40.04	5 48.37	0.228	8 51 59.45
Wed.	5	9 1 38.61	9.604	16 56 38.4	40.73	5 42.60	0.253	8 55 56.01
Thur.	6	9 5 28.81	9.579	16 40 12.5	41.41	5 36.24	0.277	8 59 52.57
Fri.	7	9 9 18.41	9.555	16 23 30.5	42.08	5 29.29	0.301	9 3 49.12
Sat.	8	9 13 7.44	9.531	16 6 32.7	42.73	5 21.76	0.325	9 7 45.68
Sun.	9	9 16 55.90	9.507	15 49 19.2	43.38	5 13.67	0.349	9 11 42.23
Mon.	10	9 20 43.80	9.484	15 31 50.4	44.01	5 5.01	0.372	9 15 38.79
Tues.	11	9 24 31.13	9.461	15 14 6.5	44.63	4 55.79	0.395	9 19 35.34
Wed.	12	9 28 17.93	9.438	14 56 7.9	45.24	4 46.03	0.418	9 23 31.90
Thur.	13	9 32 4.19	9.416	14 37 54.9	45.83	4 35.74	0.440	9 27 28.45
Fri.	14	9 35 49.93	9.394	14 19 27.8	46.42	4 24.92	0.462	9 31 25.01
Sat.	15	9 39 35.14	9.373	14 0 46.8	46.99	4 13.58	0.483	9 35 21.56
Sun.	16	9 43 19.84	9.352	13 41 52.3	47.54	4 1.72	0.504	9 39 18.12
Mon.	17	9 47 4.03	9.331	13 22 44.7	48.09	3 49.36	0.525	9 43 14.67
Tues.	18	9 50 47.73	9.310	13 3 24.1	48.62	3 36.50	0.546	9 47 11.23
Wed.	19	9 54 30.94	9.290	12 43 51.0	49.13	3 23.15	0.566	9 51 7.79
Thur.	20	9 58 13.67	9.270	12 24 5.8	49.63	3 9.33	0.586	9 55 4.34
Fri.	21	10 1 55.93	9.251	12 4 8.8	50.12	2 55.03	0.606	9 59 0.90
Sat.	22	10 5 37.71	9.232	11 44 0.2	50.59	2 40.26	0.625	10 2 57.45
Sun.	23	10 9 19.04	9.213	11 23 40.5	51.05	2 25.03	0.643	10 6 54.01
Mon.	24	10 12 59.94	9.195	11 3 10.0	51.49	2 9.38	0.661	10 10 50.56
Tues.	25	10 16 40.41	9.177	10 42 29.1	51.91	1 53.29	0.679	10 14 47.12
Wed.	26	10 20 20.44	9.160	10 21 38.1	52.33	1 36.77	0.697	10 18 43.67
Thur.	27	10 24 0.07	9.143	10 0 37.3	52.73	1 19.84	0.714	10 22 40.23
Fri.	28	10 27 39.30	9.127	9 39 27.1	53.11	1 2.52	0.730	10 26 36.78
Sat.	29	10 31 18.16	9.112	9 18 7.8	53.49	0 44.82	0.745	10 30 33.34
Sun.	30	10 34 56.66	9.097	8 56 39.7	53.85	0 26.77	0.759	10 34 29.89
Mon.	31	10 38 34.83	9.083	8 35 3.0	54.20	0 8.38	0.773	10 38 26.45
Tues.	32	10 42 12.66	9.070	N. 8 13 18.1	54.53	0 10.34	0.786	10 42 23.00

Note.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	213	129 7 0.1	6 29.4	143.55	—0.80	0.0063085	25.4	15 17 19.53
2	214	130 4 25.7	3 54.9	143.58	0.79	.0062465	26.1	15 13 23.62
3	215	131 1 52.1	1 21.2	143.62	0.77	.0061831	26.7	15 9 27.70
4	216	131 59 19.4	58 48.4	143.66	0.72	.0061184	27.2	15 5 31.79
5	217	132 56 47.7	56 16.5	143.70	0.62	.0060526	27.7	15 1 35.88
6	218	133 54 17.0	53 45.6	143.74	0.52	.0059856	28.2	14 57 39.97
7	219	134 51 47.4	51 15.8	143.79	0.40	.0059174	28.8	14 53 44.06
8	220	135 49 19.1	48 47.4	143.84	0.26	.0058480	29.2	14 49 48.15
9	221	136 46 52.1	46 20.3	143.90	—0.13	.0057775	29.6	14 45 52.24
10	222	137 44 26.4	43 54.4	143.96	+0.01	.0057058	30.1	14 41 56.33
11	223	138 42 2.1	41 29.9	144.02	0.13	.0056328	30.8	14 38 0.42
12	224	139 39 39.4	39 7.1	144.08	0.24	.0055582	31.4	14 34 4.51
13	225	140 37 18.2	36 45.8	144.14	0.32	.0054820	32.1	14 30 8.61
14	226	141 34 58.5	34 26.0	144.21	0.37	.0054041	32.8	14 26 12.70
15	227	142 32 40.4	32 7.7	144.28	0.40	.0053245	33.6	14 22 16.79
16	228	143 30 23.9	29 51.1	144.35	0.40	.0052429	34.4	14 18 20.88
17	229	144 28 9.0	27 36.0	144.41	0.37	.0051594	35.2	14 14 24.97
18	230	145 25 55.7	25 22.6	144.47	0.30	.0050738	36.1	14 10 29.06
19	231	146 23 43.8	23 10.5	144.53	0.21	.0049862	36.9	14 6 33.15
20	232	147 21 33.4	21 0.0	144.59	+0.10	.0048966	37.8	14 2 37.24
21	233	148 19 24.4	18 50.8	144.65	—0.01	.0048049	38.6	13 58 41.33
22	234	149 17 16.8	16 43.1	144.71	0.15	.0047111	39.4	13 54 45.42
23	235	150 15 10.5	14 36.7	144.77	0.28	.0046154	40.2	13 50 49.52
24	236	151 13 5.6	12 31.7	144.82	0.40	.0045180	40.9	13 46 53.61
25	237	152 11 2.0	10 27.9	144.88	0.51	.0044189	41.6	13 42 57.70
26	238	153 8 59.8	8 25.5	144.93	0.59	.0043182	42.3	13 39 1.79
27	239	154 6 58.8	6 24.4	144.99	0.65	.0042160	42.8	13 35 5.88
28	240	155 4 59.2	4 24.7	145.04	0.68	.0041126	43.3	13 31 9.97
29	241	156 3 0.8	2 26.2	145.09	0.70	.0040080	43.7	13 27 14.06
30	242	157 1 3.8	0 29.0	145.15	0.67	.0039024	44.2	13 23 18.15
31	243	157 59 8.3	58 33.4	145.22	0.62	.0037959	44.5	13 19 22.24
32	244	158 57 14.3	56 39.3	145.28	—0.53	0.0036889	44.8	13 15 26.33

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	14 58.2	15 1.8	54 49.6	+1.02	55 2.7	+1.16	8 48.1	2.22	11.2
2	15 5.7	15 10.1	55 17.4	1.28	55 33.3	1.38	9 42.3	2.27	12.2
3	15 14.7	15 19.6	55 50.3	1.46	56 8.0	1.50	10 37.0	2.25	13.2
4	15 24.6	15 29.6	56 26.2	1.52	56 44.5	1.52	11 30.6	2.19	14.2
5	15 34.5	15 39.3	57 2.6	1.48	57 20.2	1.42	12 22.1	2.10	15.2
6	15 43.8	15 48.0	57 37.0	1.36	57 52.9	1.28	13 11.3	2.01	16.2
7	15 51.9	15 55.6	58 7.6	1.18	58 21.0	1.06	13 58.8	1.96	17.2
8	15 59.0	16 1.9	58 33.1	0.94	58 43.7	0.82	14 45.4	1.95	18.2
9	16 4.4	16 6.5	58 52.8	0.70	59 0.5	0.58	15 32.4	2.00	19.2
10	16 8.2	16 9.5	59 6.7	0.46	59 11.5	0.34	16 21.3	2.10	20.2
11	16 10.4	16 11.0	59 14.9	0.22	59 17.0	+0.12	17 13.1	2.24	21.2
12	16 11.2	16 11.1	59 17.9	+0.02	59 17.6	−0.08	18 8.9	2.40	22.2
13	16 10.7	16 10.0	59 16.1	−0.18	59 13.3	0.28	19 8.5	2.54	23.2
14	16 8.9	16 7.4	59 9.2	0.38	59 3.8	0.50	20 10.8	2.59	24.2
15	16 5.5	16 3.3	58 57.0	0.62	58 48.8	0.74	21 13.0	2.54	25.2
16	16 0.7	15 57.7	58 39.2	0.86	58 28.2	0.98	22 12.7	2.39	26.2
17	15 54.3	15 50.6	58 15.8	1.10	58 2.1	1.20	23 7.9	2.20	27.2
18	15 46.5	15 42.1	57 47.1	1.30	57 31.1	1.38	23 58.5	2.02	28.2
19	15 37.5	15 32.7	57 14.2	1.44	56 56.7	1.48	ó		29.2
20	15 27.8	15 22.9	56 38.7	1.50	56 20.6	1.50	0 44.9	1.87	0.8
21	15 18.1	15 13.4	56 2.7	1.48	55 45.2	1.44	1 28.2	1.76	1.8
22	15 8.8	15 4.5	55 28.5	1.36	55 12.8	1.26	2 9.6	1.71	2.8
23	15 0.6	14 57.1	54 58.5	1.14	54 45.8	1.00	2 50.4	1.71	3.8
24	14 54.2	14 51.8	54 34.9	0.84	54 26.1	0.64	3 31.6	1.75	4.8
25	14 50.0	14 48.9	54 19.6	0.44	54 15.4	−0.24	4 14.3	1.83	5.8
26	14 48.4	14 48.6	54 13.7	−0.04	54 14.5	+0.18	4 59.4	1.94	6.8
27	14 49.5	14 51.1	54 17.9	+0.40	54 23.9	0.60	5 47.2	2.05	7.8
28	14 53.5	14 56.6	54 32.5	0.80	54 43.6	1.00	6 37.9	2.16	8.8
29	15 0.3	15 4.6	54 57.1	1.18	55 12.7	1.36	7 31.0	2.23	9.8
30	15 9.4	15 14.6	55 30.3	1.54	55 49.7	1.68	8 25.1	2.25	10.8
31	15 20.2	15 26.1	56 10.6	1.78	56 32.5	1.84	9 19.0	2.22	11.8
32	15 32.3	15 38.8	56 55.1	+1.89	57 18.1	+1.92	10 11.7	2.14	12.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 9 31.83	2.2810	S.28 1 17.5	3.100
1	17 11 48.80	2.2847	28 4 19.3	2.960
2	17 14 5.99	2.2884	28 7 12.7	2.820
3	17 16 23.40	2.2920	28 9 57.5	2.679
4	17 18 41.04	2.2955	28 12 33.9	2.538
5	17 20 58.88	2.2989	28 15 1.9	2.396
6	17 23 16.92	2.3023	28 17 21.4	2.253
7	17 25 35.16	2.3056	28 19 32.2	2.109
8	17 27 53.60	2.3088	28 21 34.3	1.965
9	17 30 12.23	2.3119	28 23 27.8	1.820
10	17 32 31.05	2.3150	28 25 12.6	1.674
11	17 34 50.05	2.3180	28 26 48.6	1.527
12	17 37 9.22	2.3209	28 28 15.8	1.380
13	17 39 28.56	2.3237	28 29 34.1	1.233
14	17 41 48.06	2.3264	28 30 43.6	1.085
15	17 44 7.73	2.3291	28 31 44.3	0.937
16	17 46 27.55	2.3317	28 32 36.1	0.788
17	17 48 47.53	2.3341	28 33 18.9	0.639
18	17 51 7.66	2.3364	28 33 52.8	0.489
19	17 53 27.93	2.3386	28 34 17.8	0.339
20	17 55 48.32	2.3407	28 34 33.7	0.189
21	17 58 8.82	2.3427	28 34 40.6	0.038
22	18 0 29.44	2.3446	28 34 38.3	0.113
23	18 2 50.17	2.3464	S.28 34 26.9	0.265

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 5 11.01	2.3481	S.28 34 6.5	0.417
1	18 7 31.95	2.3497	28 33 37.0	0.569
2	18 9 52.99	2.3513	28 32 58.3	0.722
3	18 12 14.12	2.3528	28 32 10.4	0.875
4	18 14 35.33	2.3542	28 31 13.3	1.028
5	18 16 56.62	2.3555	28 30 7.0	1.182
6	18 19 17.99	2.3567	28 28 51.6	1.336
7	18 21 39.42	2.3577	28 27 26.9	1.490
8	18 24 0.91	2.3586	28 25 52.9	1.644
9	18 26 22.44	2.3594	28 24 9.6	1.798
10	18 28 44.02	2.3601	28 22 17.0	1.952
11	18 31 5.64	2.3607	28 20 15.1	2.107
12	18 33 27.29	2.3612	28 18 4.0	2.262
13	18 35 48.97	2.3616	28 15 43.7	2.416
14	18 38 10.68	2.3619	28 13 14.2	2.570
15	18 40 32.40	2.3621	28 10 35.4	2.724
16	18 42 54.13	2.3622	28 7 47.4	2.878
17	18 45 15.86	2.3622	28 4 50.1	3.033
18	18 47 37.58	2.3621	28 1 43.5	3.188
19	18 49 59.30	2.3619	27 58 27.6	3.343
20	18 52 21.00	2.3616	27 55 2.4	3.498
21	18 54 42.68	2.3612	27 51 27.9	3.653
22	18 57 4.33	2.3607	27 47 44.0	3.808
23	18 59 25.95	2.3601	27 43 50.9	3.962
24	19 1 47.53	2.3594	S.27 39 48.6	4.116

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	19 1 47.53	2.3594	S.27 39 48.6	4.116
1	19 4 9.06	2.3586	27 35 37.1	4.269
2	19 6 30.54	2.3576	27 31 16.3	4.422
3	19 8 51.96	2.3565	27 26 46.4	4.575
4	19 11 13.31	2.3554	27 22 7.3	4.728
5	19 13 34.59	2.3542	27 17 19.0	4.881
6	19 15 55.80	2.3529	27 12 21.4	5.034
7	19 18 16.94	2.3516	27 7 14.7	5.186
8	19 20 38.00	2.3502	27 1 58.9	5.338
9	19 22 58.96	2.3487	26 56 34.1	5.490
10	19 25 19.82	2.3471	26 51 0.1	5.641
11	19 27 40.58	2.3454	26 45 17.1	5.792
12	19 30 1.24	2.3435	26 39 25.1	5.942
13	19 32 21.79	2.3415	26 33 24.0	6.092
14	19 34 42.22	2.3395	26 27 14.0	6.242
15	19 37 2.52	2.3374	26 20 55.1	6.391
16	19 39 22.70	2.3352	26 14 27.2	6.539
17	19 41 42.75	2.3330	26 7 50.5	6.686
18	19 44 2.66	2.3307	26 1 4.9	6.833
19	19 46 22.43	2.3284	25 54 10.5	6.980
20	19 48 42.06	2.3260	25 47 7.4	7.126
21	19 51 1.54	2.3235	25 39 55.5	7.271
22	19 53 20.88	2.3209	25 32 34.9	7.416
23	19 55 40.06	2.3183	S.25 25 5.6	7.560

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 57 59.08	2.3156	S.25 17 27.7	7.704
1	20 0 17.94	2.3129	25 9 41.2	7.847
2	20 2 36.62	2.3101	25 1 46.2	7.989
3	20 4 55.13	2.3072	24 53 42.7	8.131
4	20 7 13.47	2.3042	24 45 30.6	8.272
5	20 9 31.63	2.3012	24 37 10.1	8.412
6	20 11 49.61	2.2982	24 28 41.3	8.551
7	20 14 7.41	2.2951	24 20 4.1	8.689
8	20 16 25.03	2.2919	24 11 18.7	8.826
9	20 18 42.45	2.2887	24 2 25.1	8.962
10	20 20 59.67	2.2855	23 53 23.3	9.098
11	20 23 16.69	2.2822	23 44 13.3	9.233
12	20 25 33.52	2.2789	23 34 55.3	9.367
13	20 27 50.16	2.2756	23 25 29.3	9.500
14	20 30 6.59	2.2722	23 15 55.4	9.632
15	20 32 22.81	2.2688	23 6 13.6	9.762
16	20 34 38.82	2.2654	22 56 23.9	9.891
17	20 36 54.63	2.2619	22 46 26.5	10.020
18	20 39 10.23	2.2584	22 36 21.5	10.148
19	20 41 25.62	2.2548	22 26 8.8	10.275
20	20 43 40.80	2.2512	22 15 48.5	10.402
21	20 45 55.76	2.2476	22 5 20.6	10.528
22	20 48 10.50	2.2440	21 54 45.2	10.653
23	20 50 25.03	2.2404	21 44 2.4	10.777
24	20 52 39.34	2.2367	S.21 33 12.1	10.900

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	20 52 39.34	2.2367	S.21 33 12.1	10.900
1	20 54 53.43	2.2331	21 22 14.5	11.021
2	20 57 7.31	2.2295	21 11 9.7	11.141
3	20 59 20.97	2.2259	20 59 57.7	11.260
4	21 1 34.40	2.2222	20 48 38.6	11.378
5	21 3 47.61	2.2185	20 37 12.5	11.495
6	21 6 0.62	2.2148	20 25 39.3	11.611
7	21 8 13.41	2.2110	20 13 59.2	11.726
8	21 10 21.97	2.2072	20 2 12.3	11.840
9	21 12 38.28	2.2034	19 50 18.7	11.952
10	21 14 50.36	2.1997	19 38 18.3	12.062
11	21 17 2.24	2.1961	19 26 11.2	12.171
12	21 19 13.91	2.1925	19 13 57.6	12.278
13	21 21 25.36	2.1889	19 1 37.5	12.384
14	21 23 36.59	2.1853	18 49 10.9	12.489
15	21 25 47.61	2.1818	18 36 38.0	12.593
16	21 27 58.40	2.1782	18 23 58.8	12.698
17	21 30 8.98	2.1746	18 11 13.4	12.802
18	21 32 19.34	2.1710	17 58 21.8	12.905
19	21 34 29.50	2.1675	17 45 24.1	13.007
20	21 36 39.45	2.1640	17 32 20.5	13.107
21	21 38 49.18	2.1605	17 19 11.0	13.206
22	21 40 58.69	2.1570	17 5 55.6	13.303
23	21 43 8.00	2.1535	S.16 52 34.5	13.399

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 45 17.11	2.1501	S.16 39 7.6	13.494
1	21 47 26.02	2.1467	16 25 35.1	13.588
2	21 49 34.72	2.1433	16 11 57.1	13.681
3	21 51 43.22	2.1400	15 58 13.6	13.772
4	21 53 51.51	2.1367	15 44 24.7	13.861
5	21 55 59.61	2.1334	15 30 30.5	13.948
6	21 58 7.52	2.1302	15 16 31.1	14.033
7	22 0 15.23	2.1271	15 2 26.5	14.118
8	22 2 22.76	2.1240	14 48 16.8	14.202
9	22 4 30.10	2.1209	14 34 2.1	14.285
10	22 6 37.26	2.1178	14 19 42.4	14.367
11	22 8 44.24	2.1148	14 5 17.9	14.448
12	22 10 51.04	2.1118	13 50 48.7	14.527
13	22 12 57.66	2.1089	13 36 14.8	14.605
14	22 15 4.11	2.1060	13 21 36.2	14.681
15	22 17 10.40	2.1032	13 6 53.1	14.756
16	22 19 16.51	2.1005	12 52 5.6	14.830
17	22 21 22.46	2.0978	12 37 13.6	14.902
18	22 23 28.24	2.0952	12 22 17.3	14.973
19	22 25 33.86	2.0926	12 7 16.8	15.042
20	22 27 39.33	2.0900	11 52 12.2	15.110
21	22 29 44.66	2.0875	11 37 3.6	15.177
22	22 31 49.83	2.0850	11 21 51.0	15.242
23	22 33 54.86	2.0826	11 6 34.5	15.306
24	22 35 59.76	2.0803	S.10 51 14.1	15.369

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 35 59.76	2.0803	S.10 51 14.1	15.369
1	22 38 4.51	2.0781	10 35 50.0	15.431
2	22 40 9.13	2.0760	10 20 22.3	15.492
3	22 42 13.63	2.0739	10 4 51.0	15.552
4	22 44 17.99	2.0719	9 49 16.2	15.610
5	22 46 22.24	2.0699	9 33 38.0	15.666
6	22 48 26.37	2.0679	9 17 56.5	15.720
7	22 50 30.38	2.0660	9 2 11.7	15.773
8	22 52 34.29	2.0642	8 46 23.8	15.824
9	22 54 38.09	2.0625	8 30 32.8	15.874
10	22 56 41.78	2.0608	8 14 38.8	15.923
11	22 58 45.38	2.0592	7 58 41.9	15.971
12	23 0 48.89	2.0577	7 42 42.2	16.018
13	23 2 52.30	2.0562	7 26 39.7	16.064
14	23 4 55.63	2.0548	7 10 34.6	16.109
15	23 6 58.88	2.0535	6 54 26.9	16.152
16	23 9 2.04	2.0523	6 38 16.7	16.193
17	23 11 5.14	2.0512	6 22 4.0	16.232
18	23 13 8.18	2.0501	6 5 49.0	16.270
19	23 15 11.16	2.0491	5 49 31.8	16.306
20	23 17 14.08	2.0482	5 33 12.4	16.341
21	23 19 16.94	2.0473	5 16 50.9	16.375
22	23 21 19.76	2.0465	5 0 27.4	16.408
23	23 23 22.53	2.0458	S. 4 44 1.9	16.440

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 25 25.26	2.0452	S. 4 27 34.6	16.471
1	23 27 27.95	2.0446	4 11 5.6	16.500
2	23 29 30.62	2.0441	3 54 34.9	16.527
3	23 31 33.26	2.0437	3 38 2.6	16.552
4	23 33 35.87	2.0434	3 21 28.8	16.575
5	23 35 38.47	2.0432	3 4 53.6	16.597
6	23 37 41.07	2.0431	2 48 17.1	16.618
7	23 39 43.66	2.0432	2 31 39.3	16.638
8	23 41 46.25	2.0433	2 15 0.4	16.657
9	23 43 48.85	2.0434	1 58 20.5	16.675
10	23 45 51.45	2.0436	1 41 39.6	16.691
11	23 47 54.07	2.0438	1 24 57.7	16.706
12	23 49 56.70	2.0441	1 8 15.0	16.719
13	23 51 59.35	2.0445	0 51 31.6	16.730
14	23 54 2.04	2.0450	0 34 47.5	16.740
15	23 56 4.77	2.0456	0 18 2.9	16.749
16	23 58 7.53	2.0463	S. 0 1 17.8	16.756
17	0 0 10.34	2.0470	N. 0 15 27.7	16.762
18	0 2 13.19	2.0478	0 32 13.6	16.767
19	0 4 16.09	2.0487	0 48 59.6	16.771
20	0 6 19.06	2.0498	1 5 45.7	16.773
21	0 8 22.09	2.0510	1 22 31.9	16.773
22	0 10 25.19	2.0523	1 39 18.1	16.771
23	0 12 28.37	2.0537	1 56 4.2	16.767
24	0 14 31.64	2.0551	N. 2 12 50.0	16.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 14 31.64	2.0551	N. 2 12 50.0	16.762
1	0 16 34.99	2.0566	2 29 35.5	16.756
2	0 18 38.43	2.0582	2 46 20.6	16.749
3	0 20 41.97	2.0598	3 3 5.3	16.740
4	0 22 45.61	2.0615	3 19 49.4	16.730
5	0 24 49.35	2.0633	3 36 32.8	16.719
6	0 26 53.21	2.0652	3 53 15.4	16.706
7	0 28 57.18	2.0672	4 9 57.2	16.691
8	0 31 1.28	2.0692	4 26 38.1	16.675
9	0 33 5.50	2.0713	4 43 18.1	16.657
10	0 35 9.85	2.0735	4 59 56.9	16.639
11	0 37 14.35	2.0759	5 16 34.5	16.619
12	0 39 18.99	2.0784	5 33 10.8	16.597
13	0 41 23.77	2.0810	5 49 45.8	16.573
14	0 43 28.71	2.0837	6 6 19.3	16.547
15	0 45 33.81	2.0864	6 22 51.3	16.520
16	0 47 39.07	2.0893	6 39 21.6	16.491
17	0 49 44.51	2.0921	6 55 50.2	16.461
18	0 51 50.12	2.0950	7 12 17.0	16.430
19	0 53 55.91	2.0980	7 28 41.9	16.398
20	0 56 1.88	2.1011	7 45 4.8	16.364
21	0 58 8.04	2.1043	8 1 25.6	16.329
22	1 0 14.40	2.1076	8 17 44.1	16.292
23	1 2 20.96	2.1109	N. 8 34 0.4	16.253

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 4 27.72	2.1143	N. 8 50 14.3	16.212
1	1 6 34.68	2.1179	9 6 25.7	16.171
2	1 8 41.87	2.1216	9 22 34.6	16.128
3	1 10 49.28	2.1254	9 38 40.8	16.083
4	1 12 56.92	2.1293	9 54 44.3	16.036
5	1 15 4.79	2.1332	10 10 44.9	15.987
6	1 17 12.90	2.1372	10 26 42.6	15.936
7	1 19 21.25	2.1412	10 42 37.2	15.884
8	1 21 29.85	2.1453	10 58 28.7	15.831
9	1 23 38.70	2.1495	11 14 17.1	15.777
10	1 25 47.79	2.1538	11 30 2.2	15.722
11	1 27 57.15	2.1581	11 45 43.8	15.665
12	1 30 6.78	2.1625	12 1 22.0	15.606
13	1 32 16.68	2.1670	12 16 56.6	15.545
14	1 34 26.85	2.1716	12 32 27.5	15.482
15	1 36 37.29	2.1763	12 47 54.6	15.418
16	1 38 48.01	2.1811	13 3 17.7	15.353
17	1 40 59.02	2.1860	13 18 36.8	15.286
18	1 43 10.32	2.1909	13 33 51.9	15.217
19	1 45 21.92	2.1958	13 49 2.8	15.147
20	1 47 33.82	2.2008	14 4 9.4	15.075
21	1 49 46.03	2.2059	14 19 11.7	15.001
22	1 51 58.55	2.2111	14 34 9.4	14.926
23	1 54 11.38	2.2163	14 49 2.5	14.848
24	1 56 24.53	2.2216	N.15 3 51.0	14.769

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 56 24.53	2.2216	N.15 3 51.0	14.769
1	1 58 37.99	2.2270	15 18 34.7	14.688
2	2 0 51.78	2.2324	15 33 13.5	14.606
3	2 3 5.90	2.2379	15 47 47.4	14.522
4	2 5 20.35	2.2435	16 2 16.1	14.436
5	2 7 35.14	2.2491	16 16 39.6	14.349
6	2 9 50.26	2.2548	16 30 57.9	14.260
7	2 12 5.72	2.2605	16 45 10.8	14.170
8	2 14 21.53	2.2663	16 59 18.2	14.078
9	2 16 37.69	2.2722	17 13 20.1	13.984
10	2 18 54.21	2.2782	17 27 16.3	13.889
11	2 21 11.08	2.2842	17 41 6.7	13.792
12	2 23 28 31	2.2902	17 54 51.2	13.693
13	2 25 45.89	2.2962	18 8 29.7	13.592
14	2 28 3.84	2.3023	18 22 2.2	13.490
15	2 30 22.15	2.3084	18 35 28.5	13.386
16	2 32 40.83	2.3146	18 48 48.5	13.280
17	2 34 59.88	2.3207	19 2 2.1	13.173
18	2 37 19.30	2.3269	19 15 9.2	13.064
19	2 39 39.09	2.3332	19 28 9.6	12.953
20	2 41 59.25	2.3395	19 41 3.4	12.841
21	2 44 19.80	2.3458	19 53 50.4	12.727
22	2 46 40.74	2.3521	20 6 30.5	12.611
23	2 49 2.06	2.3584	N.20 19 3.6	12.493

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 51 23.75	2.3647	N.20 31 29.6	12.374
1	2 53 45.82	2.3711	20 43 48.3	12.253
2	2 56 8.27	2.3775	20 55 59.7	12.130
3	2 58 31.12	2.3839	21 8 3.8	12.006
4	3 0 54.36	2.3903	21 20 0.3	11.880
5	3 3 17.98	2.3967	21 31 49.2	11.752
6	3 5 41.98	2.4031	21 43 30.5	11.623
7	3 8 6.36	2.4095	21 55 3.9	11.492
8	3 10 31.13	2.4160	22 6 29.4	11.360
9	3 12 56.30	2.4225	22 17 46.9	11.226
10	3 15 21.85	2.4289	22 28 56.3	11.090
11	3 17 47.78	2.4353	22 39 57.5	10.952
12	3 20 14.10	2.4417	22 50 50.4	10.812
13	3 22 40.79	2.4481	23 1 34.8	10.670
14	3 25 7.86	2.4544	23 12 10.8	10.527
15	3 27 35.33	2.4607	23 22 38.2	10.383
16	3 30 3.18	2.4670	23 32 56.8	10.238
17	3 32 31.40	2.4733	23 43 6.6	10.092
18	3 34 59.98	2.4795	23 53 7.7	9.944
19	3 37 28.94	2.4857	24 2 59.8	9.794
20	3 39 58.27	2.4919	24 12 42.8	9.643
21	3 42 27.97	2.4981	24 22 16.6	9.488
22	3 44 58.05	2.5042	24 31 41.1	9.332
23	3 47 28.48	2.5103	24 40 56.3	9.175
24	3 49 59.25	2.5163	N.24 50 2.0	9.017

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 49 59.25	2.5163	N.24 50 2.0	9.017
1	3 52 30.38	2.5222	24 58 58.2	8.858
2	3 55 1.86	2.5280	25 7 44.8	8.697
3	3 57 33.70	2.5337	25 16 21.8	8.535
4	4 0 5.89	2.5393	25 24 48.9	8.372
5	4 2 38.41	2.5448	25 33 6 2	8.207
6	4 5 11.27	2.5503	25 41 13.5	8.041
7	4 7 44.45	2.5557	25 49 10.8	7.873
8	4 10 17.95	2.5610	25 56 58.1	7.703
9	4 12 51.77	2.5663	26 4 35.2	7.532
10	4 15 25.91	2.5715	26 12 2.0	7.360
11	4 18 0.35	2.5766	26 19 18.4	7.187
12	4 20 35.09	2.5815	26 26 24.3	7.013
13	4 23 10.13	2.5863	26 33 19.8	6.838
14	4 25 45.45	2.5911	26 40 4.8	6.661
15	4 28 21.07	2.5958	26 46 39.1	6.483
16	4 30 56.97	2.6003	26 53 2.7	6.304
17	4 33 33.13	2.6047	26 59 15.5	6.124
18	4 36 9.54	2.6090	27 5 17.5	5.943
19	4 38 46.21	2.6132	27 11 8.7	5.761
20	4 41 23.12	2.6173	27 16 48.9	5.578
21	4 44 0.28	2.6212	27 22 18.1	5.394
22	4 46 37.68	2.6250	27 27 36.1	5.209
23	4 49 15.29	2.6287	N.27 32 42.9	5.022

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	4 51 53.11	2.6323	N.27 37 38.6	4.835
1	4 54 31.13	2.6357	27 42 23.1	4.647
2	4 57 9.35	2.6389	27 46 56.4	4.458
3	4 59 47.77	2.6419	27 51 18.3	4.268
4	5 2 26.36	2.6447	27 55 28.7	4.078
5	5 5 5.12	2.6474	27 59 27.7	3.888
6	5 7 44.04	2.6499	28 3 15.3	3.697
7	5 10 23.12	2.6523	28 6 51.5	3.506
8	5 13 2.33	2.6546	28 10 16.2	3.314
9	5 15 41.67	2.6568	28 13 29.3	3.122
10	5 18 21.14	2.6588	28 16 30.8	2.929
11	5 21 0.72	2.6606	28 19 20.6	2.735
12	5 23 40.40	2.6622	28 21 58.7	2.541
13	5 26 20.18	2.6637	28 24 25.1	2.346
14	5 29 0.04	2.6650	28 26 39.9	2.150
15	5 31 39.97	2.6661	28 28 43.1	1.954
16	5 34 19.96	2.6670	28 30 34.5	1.758
17	5 36 59.99	2.6677	28 32 14.1	1.562
18	5 39 40.07	2.6683	28 33 41.9	1.366
19	5 42 20.19	2.6687	28 34 57.9	1.170
20	5 45 0.31	2.6689	28 36 2.2	0.974
21	5 47 40.43	2.6689	28 36 54.8	0.778
22	5 50 20.57	2.6688	28 37 35.5	0.582
23	5 53 0.68	2.6685	28 38 4.4	0.385
24	5 55 40.77	2.6680	N.28 38 21.5	0.188

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 55 40.77	2.6680	N.28 38 21.5	0.188
1	5 58 20.83	2.6673	28 38 27.0	0.009
2	6 1 0.84	2.6664	28 38 20.7	0.205
3	6 3 40.79	2.6653	28 38 2.5	0.401
4	6 6 20.67	2.6641	28 37 32.6	0.597
5	6 9 0.47	2.6627	28 36 51.0	0.792
6	6 11 40.19	2.6611	28 35 57.7	0.986
7	6 14 19.81	2.6593	28 34 52.7	1.108
8	6 16 59.32	2.6573	28 33 36.1	1.374
9	6 19 38.69	2.6551	28 32 7.9	1.567
10	6 22 18.92	2.6527	28 30 28.1	1.706
11	6 24 57.02	2.6502	28 28 36.7	1.953
12	6 27 35.99	2.6475	28 26 33.8	2.145
13	6 30 14.81	2.6447	28 24 19.4	2.336
14	6 32 53.44	2.6418	28 21 53.6	2.527
15	6 35 31.87	2.6388	28 19 16.3	2.717
16	6 38 10.09	2.6356	28 16 27.6	2.906
17	6 40 48.10	2.6322	28 13 27.6	3.094
18	6 43 25.91	2.6287	28 10 16.3	3.282
19	6 46 3.51	2.6251	28 6 53.7	3.469
20	6 48 40.89	2.6213	28 3 20.0	3.655
21	6 51 18.06	2.6173	27 59 35.2	3.840
22	6 53 55.00	2.6131	27 55 39.3	4.024
23	6 56 31.68	2.6087	N.27 51 32.4	4.207

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 59 8.07	2.6042	N.27 47 14.5	4.389
1	7 1 44.18	2.5996	27 42 45.8	4.570
2	7 4 20.00	2.5946	27 38 6.2	4.749
3	7 6 55.52	2.5896	27 33 15.9	4.927
4	7 9 30.74	2.5845	27 28 14.9	5.104
5	7 12 5.65	2.5793	27 23 3.3	5.279
6	7 14 40.25	2.5740	27 17 41.3	5.453
7	7 17 14.53	2.5686	27 12 8.9	5.626
8	7 19 48.48	2.5631	27 6 26.0	5.799
9	7 22 22.09	2.5574	27 0 32.8	5.971
10	7 24 55.36	2.5516	26 54 29.3	6.142
11	7 27 28.27	2.5457	26 48 15.7	6.312
12	7 30 0.83	2.5396	26 41 52.0	6.480
13	7 32 33.03	2.5334	26 35 18.3	6.646
14	7 35 4.86	2.5272	26 28 34.6	6.811
15	7 37 36.31	2.5209	26 21 41.1	6.974
16	7 40 7.38	2.5145	26 14 37.8	7.136
17	7 42 38.06	2.5081	26 7 24.9	7.296
18	7 45 8.36	2.5016	26 0 2.4	7.454
19	7 47 38.27	2.4950	25 52 30.5	7.611
20	7 50 7.77	2.4883	25 44 49.2	7.767
21	7 52 36.87	2.4815	25 36 58.5	7.922
22	7 55 5.55	2.4747	25 28 58.7	8.074
23	7 57 33.82	2.4678	25 20 49.9	8.224
24	8 0 1.67	2.4608	N.25 12 32.1	8.373

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 0 1.67	2.4606	N.25 12 32.1	8.378
1	8 2 29.11	2.4538	25 4 5.4	8.520
2	8 4 56.12	2.4467	24 55 29.9	8.665
3	8 7 22.70	2.4395	24 46 45.7	8.809
4	8 9 48.85	2.4322	24 37 53.0	8.951
5	8 12 14.56	2.4249	24 28 51.8	9.091
6	8 14 39.84	2.4176	24 19 42.2	9.229
7	8 17 4.68	2.4103	24 10 24.4	9.365
8	8 19 29.08	2.4030	24 0 58.4	9.500
9	8 21 53.03	2.3956	23 51 24.2	9.634
10	8 24 16.54	2.3882	23 41 42.0	9.767
11	8 26 39.60	2.3808	23 31 52.0	9.899
12	8 29 2.22	2.3733	23 21 54.1	10.030
13	8 31 24.39	2.3658	23 11 48 5	10.158
14	8 33 46.11	2.3583	23 1 35.4	10.284
15	8 36 7.37	2.3507	22 51 14.7	10.408
16	8 38 28.17	2.3431	22 40 46.6	10.529
17	8 40 48.52	2.3355	22 30 11.3	10.648
18	8 43 8.42	2.3279	22 19 28.8	10.766
19	8 45 27.87	2.3203	22 8 39.3	10.883
20	8 47 46.88	2.3127	21 57 42.8	10.998
21	8 50 5.43	2.3052	21 46 39.4	11.112
22	8 52 23.51	2.2977	21 35 29.2	11.225
23	8 54 41.14	2.2902	N.21 24 12.5	11.335

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 56 58.33	2.2827	N.21 12 49.3	11.443
1	8 59 15.07	2.2752	21 1 19.6	11.549
2	9 1 31.36	2.2677	20 49 43.6	11.653
3	9 3 47.20	2.2602	20 38 1.4	11.755
4	9 6 2.58	2.2528	20 26 13.0	11.856
5	9 8 17.52	2.2454	20 14 18.7	11.955
6	9 10 32.02	2.2380	20 2 18.5	12.053
7	9 12 46.08	2.2306	19 50 12.5	12.149
8	9 14 59.70	2.2233	19 38 0.7	12.243
9	9 17 12.88	2.2161	19 25 43.3	12.336
10	9 19 25.61	2.2089	19 13 20.4	12.427
11	9 21 37.91	2.2017	19 0 52.2	12.516
12	9 23 49.78	2.1945	18 48 18.7	12.603
13	9 26 1.23	2.1873	18 35 39.9	12.688
14	9 28 12.25	2.1801	18 22 56.1	12.773
15	9 30 22.83	2.1730	18 10 7.2	12.856
16	9 32 32.97	2.1659	18 7 13.4	12.937
17	9 34 42.70	2.1588	17 54 14.9	13.016
18	9 36 52.02	2.1518	17 31 11.6	13.093
19	9 39 0.92	2.1449	17 18 3.7	13.168
20	9 41 9.41	2.1381	17 4 51.3	13.242
21	9 43 17.50	2.1313	16 51 34.5	13.314
22	9 45 25.18	2.1246	16 38 13.5	13.385
23	9 47 32.46	2.1180	16 24 48.3	13.454
24	9 49 39.34	2.1114	N.16 11 18.9	13.522

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	9 49 39.34	2.1114	N.16 11 18.9	13.522
1	9 51 45.83	2.1049	16 7 45.5	13.588
2	9 53 51.93	2.0984	15 54 8.2	13.653
3	9 55 57.64	2.0919	15 30 27.1	13.716
4	9 58 2.96	2.0855	15 16 42.3	13.778
5	10 0 7.90	2.0791	15 2 53.8	13.839
6	10 2 12.47	2.0728	14 49 1.6	13.898
7	10 4 16.67	2.0666	14 35 5.8	13.955
8	10 6 20.50	2.0605	14 21 6.7	14.011
9	10 8 23.96	2.0545	14 7 4.3	14.066
10	10 10 27.05	2.0485	13 52 58 9	14.119
11	10 12 29.79	2.0426	13 38 50.5	14.171
12	10 14 32.17	2.0368	13 24 38.9	14.221
13	10 16 34.20	2.0310	13 10 24.3	14.269
14	10 18 35.89	2.0253	12 56 6.8	14.315
15	10 20 37.24	2.0196	12 41 46.6	14.359
16	10 22 38.25	2.0140	12 27 23.7	14.403
17	10 24 38.93	2.0085	12 12 58.3	14.444
18	10 26 39.28	2.0031	11 58 30.3	14.485
19	10 28 39.31	1.9978	11 43 59.9	14.525
20	10 30 39.02	1.9925	11 29 27.2	14.563
21	10 32 38.42	1.9873	11 14 52.1	14.600
22	10 34 37.50	1.9822	11 0 14.8	14.636
23	10 36 36.28	1.9772	N.10 45 35.5	14.671

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 38 34.76	1.9722	N.10 30 54.2	14.705
1	10 40 32.94	1.9673	10 16 11.0	14.738
2	10 42 30.83	1.9625	10 1 25.9	14.769
3	10 44 28.44	1.9578	9 46 38.9	14.799
4	10 46 25 77	1.9531	9 31 50.3	14.827
5	10 48 22.82	1.9485	9 17 0.0	14.853
6	10 50 19.59	1.9440	9 2 8.2	14.878
7	10 52 16.09	1.9396	8 47 14.9	14.902
8	10 54 12.32	1.9352	8 32 20.2	14.925
9	10 56 8.30	1.9309	8 17 24.2	14.947
10	10 58 4.02	1.9267	8 2 26.9	14.967
11	10 59 59.40	1.9225	7 47 28.3	14.986
12	11 1 54.73	1.9184	7 32 28.6	15.004
13	11 3 49.71	1.9144	7 17 27.8	15.021
14	11 5 44.46	1.9105	7 2 26.1	15.036
15	11 7 38.98	1.9067	6 47 23.5	15.050
16	11 9 33.27	1.9030	6 32 20.1	15.063
17	11 11 27.34	1.8993	6 17 15.8	15.075
18	11 13 21.20	1.8957	6 2 10.8	15.086
19	11 15 14.84	1.8922	5 47 5.1	15 097
20	11 17 8.27	1.8888	5 31 58.9	15.107
21	11 19 1.50	1.8855	5 16 52.3	15.115
22	11 20 54.53	1.8823	5 1 45.3	15.122
23	11 22 47.37	1.8791	4 46 37.9	15.128
24	11 24 40.02	1.8760	N. 4 31 30.1	15.133

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	FRIDAY 21.					SUNDAY 23.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s	° ′ ″	″
0	11 24 40.02	1.8760	N. 4 31 30.1	15.133	0	12 52 36.11	1.8169	S. 7 21 55.0	14.255
1	11 26 32.49	1.8730	4 16 22.0	15.137	1	12 54 25.14	1.8175	7 36 9.3	14.217
2	11 28 24.78	1.8700	4 1 13.8	15.140	2	12 56 14.22	1.8182	7 50 21.2	14.178
3	11 30 16.90	1.8671	3 46 5.4	15.141	3	12 58 3.34	1.8190	8 4 30.7	14.138
4	11 32 8.84	1.8643	3 30 56.9	15.141	4	12 59 52.51	1.8198	8 18 37.7	14.097
5	11 34 0.62	1.8615	3 15 48.5	15.140	5	13 1 41.73	1.8207	8 32 42.2	14.056
6	11 35 52.23	1.8588	3 0 40.2	15.138	6	13 3 31.00	1.8216	8 46 44.3	14.014
7	11 37 43.68	1.8562	2 45 32.0	15.135	7	13 5 20.32	1.8226	9 0 43.8	13.971
8	11 39 34.99	1.8537	2 30 24.0	15.132	8	13 7 9.71	1.8237	9 14 40.7	13.927
9	11 41 26.15	1.8513	2 15 16.2	15.128	9	13 8 59.16	1.8248	9 28 35.0	13.883
10	11 43 17.16	1.8490	2 0 8.8	15.123	10	13 10 48.68	1.8259	9 42 26.5	13.838
11	11 45 8.04	1.8468	1 45 1.7	15.117	11	13 12 38.28	1.8271	9 56 15.2	13.792
12	11 46 58.78	1.8446	1 29 54.8	15.110	12	13 14 27.96	1.8284	10 10 1.2	13.745
13	11 48 49.39	1.8425	1 14 48.4	15.101	13	13 16 17.71	1.8298	10 23 44.4	13.697
14	11 50 39.88	1.8405	0 59 42.6	15.091	14	13 18 7.55	1.8313	10 37 24.7	13.649
15	11 52 30.26	1.8386	0 44 37.5	15.080	15	13 19 57.49	1.8329	10 51 2.0	13.600
16	11 54 20.52	1.8367	0 29 33.1	15.068	16	13 21 47.52	1.8345	11 4 36.4	13.550
17	11 56 10.67	1.8349	N. 0 14 29.4	15.056	17	13 23 37.65	1.8362	11 18 7.7	13.499
18	11 58 0.72	1.8332	S. 0 0 33.7	15.043	18	13 25 27.88	1.8380	11 31 36.0	13.447
19	11 59 50.68	1.8316	0 15 36.0	15.029	19	13 27 18.22	1.8398	11 45 1.3	13.395
20	12 1 40.54	1.8301	0 30 37.4	15.014	20	13 29 8.67	1.8417	11 58 23.4	13.342
21	12 3 30.30	1.8287	0 45 37.8	14.998	21	13 30 59.23	1.8436	12 11 42.2	13.288
22	12 5 19.98	1.8273	1 0 37.2	14.981	22	13 32 49.90	1.8456	12 24 57.8	13.233
23	12 7 9.58	1.8260	S. 1 15 35.6	14.964	23	13 34 40.70	1.8477	S.12 38 10.1	13.178
	SATURDAY 22.					MONDAY 24.			
0	12 8 59.10	1.8248	S. 1 30 33.0	14.946	0	13 36 31.63	1.8498	S.12 51 19.2	13.122
1	12 10 48.55	1.8236	1 45 29.2	14.927	1	13 38 22.68	1.8519	12 4 24.9	13.066
2	12 12 37.93	1.8225	2 0 24.2	14.907	2	13 40 13.87	1.8541	13 17 27.2	13.009
3	12 14 27.25	1.8215	2 15 18.0	14.886	3	13 42 5.19	1.8564	13 30 26.0	12.951
4	12 16 16.50	1.8206	2 30 10.5	14.864	4	13 43 56.64	1.8588	13 43 21.2	12.892
5	12 18 5.70	1.8197	2 45 1.7	14.842	5	13 45 48.24	1.8612	13 56 12.9	12.833
6	12 19 54.86	1.8189	2 59 51.6	14.819	6	13 47 39.99	1.8637	14 9 1.1	12.773
7	12 21 43.97	1.8182	3 14 40.0	14.795	7	13 49 31.89	1.8663	14 21 45.7	12.712
8	12 23 33.04	1.8175	3 29 26.9	14.770	8	13 51 23.94	1.8690	14 34 26.7	12.650
9	12 25 22.07	1.8169	3 44 12.3	14.744	9	13 53 16.15	1.8717	14 47 3.9	12.588
10	12 27 11.07	1.8164	3 58 56.0	14.717	10	13 55 8.53	1.8744	14 59 37.3	12.525
11	12 29 0.04	1.8160	4 13 38.1	14.690	11	13 57 1.07	1.8772	15 12 6.8	12.462
12	12 30 48.99	1.8157	4 28 18.6	14.662	12	13 58 53.77	1.8800	15 24 32.4	12.398
13	12 32 37.92	1.8154	4 42 57.4	14.633	13	14 0 46 64	1.8829	15 36 54.2	12.333
14	12 34 26.84	1.8152	4 57 34.4	14.603	14	14 2 39.69	1.8858	15 49 12.1	12.267
15	12 36 15.74	1.8151	5 12 9.5	14.572	15	14 4 32.93	1.8887	16 1 26.1	12.200
16	12 38 4.62	1.8150	5 26 42.7	14.539	16	14 6 26.34	1.8917	16 13 36.0	12.132
17	12 39 53.51	1.8150	5 41 14.0	14.505	17	14 8 19.94	1.8948	16 25 41.8	12.063
18	12 41 42.41	1.8150	5 55 43.3	14.471	18	14 10 13.73	1.8980	16 37 43.5	11.993
19	12 43 31.32	1.8151	6 10 10.6	14.436	19	14 12 7.70	1.9012	16 49 41.0	11.923
20	12 45 20.24	1.8153	6 24 35.8	14.401	20	14 14 1.87	1.9045	17 1 34.3	11.852
21	12 47 9.18	1.8156	6 38 58.9	14.366	21	14 15 56.24	1.9078	17 13 23.4	11.781
22	12 48 58.13	1.8160	6 53 19.8	14.330	22	14 17 50.81	1.9111	17 25 8.2	11.709
23	12 50 47.11	1.8164	7 7 38.5	14.293	23	14 19 45.58	1.9145	17 36 48.6	11.636
24	12 52 36.11	1.8169	S. 7 21 55.0	14.255	24	14 21 40.56	1.9180	S.17 48 24.5	11.562

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 21 40.56	1.9180	S.17 48 24.5	11.562
1	14 23 35.74	1.9215	17 59 56.0	11.488
2	14 25 31.14	1.9251	18 11 23.0	11.413
3	14 27 26.76	1.9287	18 22 45.5	11.338
4	14 29 22.59	1.9323	18 34 3.5	11.262
5	14 31 18.64	1.9360	18 45 16.9	11.185
6	14 33 14.92	1.9398	18 56 25.7	11.107
7	14 35 11.43	1.9436	19 7 29.7	11.028
8	14 37 8.16	1.9475	19 18 28.9	10.948
9	14 39 5.12	1.9514	19 29 23.4	10.867
10	14 41 2.32	1.9553	19 40 13.0	10.785
11	14 42 59.76	1.9593	19 50 57.6	10.703
12	14 44 57.43	1.9633	20 1 37.3	10.620
13	14 46 55.34	1.9673	20 12 12.0	10.536
14	14 48 53.50	1.9714	20 22 41.6	10.452
15	14 50 51.91	1.9755	20 33 6.2	10.367
16	14 52 50.56	1.9796	20 43 25.6	10.281
17	14 54 49.46	1.9838	20 53 39.8	10.194
18	14 56 48.62	1.9880	21 3 48.9	10.106
19	14 58 48.03	1.9922	21 13 52.7	10.017
20	15 0 47.70	1.9965	21 23 51.1	9.928
21	15 2 47.62	2.0008	21 33 44.1	9.838
22	15 4 47.80	2.0051	21 43 31.7	9.748
23	15 6 48.24	2.0095	S.21 53 13.8	9.657

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 8 48.95	2.0139	S.22 2 50.4	9.565
1	15 10 49.92	2.0183	22 12 21.5	9.472
2	15 12 51.15	2.0228	22 21 46.9	9.378
3	15 14 52.66	2.0273	22 31 6.5	9.283
4	15 16 54.45	2.0318	22 40 20.5	9.187
5	15 18 56.51	2.0364	22 49 28.7	9.090
6	15 20 58.83	2.0410	22 58 31.2	8.993
7	15 23 1.43	2.0456	23 7 27.8	8.895
8	15 25 4.30	2.0502	23 16 18.4	8.796
9	15 27 7.43	2.0548	23 25 3.1	8.696
10	15 29 10.84	2.0594	23 33 41.7	8.595
11	15 31 14.53	2.0640	23 42 14.2	8.492
12	15 33 18.51	2.0686	23 50 40.7	8.389
13	15 35 22.77	2.0732	23 59 1.0	8.286
14	15 37 27.30	2.0778	24 7 15.0	8.182
15	15 39 32.11	2.0824	24 15 22.8	8.077
16	15 41 37.20	2.0870	24 23 24.3	7.972
17	15 43 42.57	2.0916	24 31 19.4	7.866
18	15 45 48.23	2.0962	24 39 8.1	7.759
19	15 47 54.17	2.1008	24 46 50.4	7.651
20	15 50 0.39	2.1054	24 54 26.1	7.542
21	15 52 6.88	2.1100	25 1 55.3	7.432
22	15 54 13.66	2.1147	25 9 17.8	7.321
23	15 56 20.72	2.1195	25 16 33.6	7.209
24	15 58 28.07	2.1243	S.25 23 42.8	7.096

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	15 58 28.07	2.1243	S.25 23 42.8	7.096
1	16 0 35.69	2.1291	25 30 45.2	6.982
2	16 2 43.59	2.1338	25 37 40.7	6.868
3	16 4 51.76	2.1385	25 44 29.4	6.753
4	16 7 0.21	2.1432	25 51 11.2	6.638
5	16 9 8.94	2.1478	25 57 46.0	6.522
6	16 11 17.96	2.1524	26 4 13.8	6.405
7	16 13 27.25	2.1570	26 10 34.6	6.287
8	16 15 36.81	2.1616	26 16 48.2	6.168
9	16 17 46.64	2.1662	26 22 54.7	6.048
10	16 19 56.75	2.1707	26 28 54.0	5.927
11	16 22 7.13	2.1752	26 34 46.0	5.805
12	16 24 17.77	2.1797	26 40 30.6	5.683
13	16 26 28.69	2.1841	26 46 8.0	5.560
14	16 28 39.87	2.1885	26 51 38.0	5.436
15	16 30 51.31	2.1929	26 57 0.5	5.311
16	16 33 3.02	2.1972	27 2 15.5	5.186
17	16 35 14.99	2.2015	27 7 22.9	5.060
18	16 37 27.21	2.2058	27 12 22.7	4.934
19	16 39 39.69	2.2101	27 17 14.9	4.807
20	16 41 52.42	2.2143	27 21 59.4	4.670
21	16 44 5.41	2.2185	27 26 36.3	4.550
22	16 46 18.65	2.2227	27 31 5.4	4.420
23	16 48 32.13	2.2268	S.27 35 26.6	4.289

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 50 45.85	2.2309	S.27 39 39.9	4.157
1	16 52 59.82	2.2349	27 43 45.4	4.025
2	16 55 14.02	2.2388	27 47 42.9	3.892
3	16 57 28.46	2.2427	27 51 32.4	3.758
4	16 59 43.14	2.2465	27 55 13.9	3.624
5	17 1 58.04	2.2502	27 58 47.3	3.489
6	17 4 13.16	2.2539	28 2 12.5	3.353
7	17 6 28.50	2.2575	28 5 29.7	3.217
8	17 8 44.06	2.2610	28 8 38.6	3.080
9	17 10 59.83	2.2645	28 11 39.3	2.942
10	17 13 15.81	2.2680	28 14 31.8	2.804
11	17 15 32.00	2.2715	28 17 15.9	2.665
12	17 17 48.40	2.2749	28 19 51.6	2.525
13	17 20 5.00	2.2782	28 22 18.9	2.385
14	17 22 21.79	2.2814	28 24 37.8	2.244
15	17 24 38.78	2.2845	28 26 48.3	2.103
16	17 26 55.95	2.2876	28 28 50.3	1.961
17	17 29 13.30	2.2906	28 30 43.7	1.818
18	17 31 30.82	2.2935	28 32 28.5	1.675
19	17 33 48.52	2.2964	28 34 4.7	1.532
20	17 36 6.39	2.2992	28 35 32.3	1.388
21	17 38 24.42	2.3019	28 36 51.3	1.244
22	17 40 42.61	2.3045	28 38 1.5	1.099
23	17 43 0.95	2.3070	28 39 3.0	0.953
24	17 45 19.45	2.3095	S.28 39 55.8	0.807

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 45 19.45	2.3095	S.28 39 55.8	0.807
1	17 47 38.10	2.3119	28 40 39.9	0.660
2	17 49 56.88	2.3142	28 41 15.1	0.513
3	17 52 15.79	2.3164	28 41 41.4	0.366
4	17 54 34.83	2.3185	28 41 58.9	0.218
5	17 56 54.01	2.3206	28 42 7.5	0.069
6	17 59 13.31	2.3226	28 42 7.2	0.080
7	18 1 32.74	2.3245	28 41 58.0	0.229
8	18 3 52.27	2.3263	28 41 39.8	0.378
9	18 6 11.90	2.3280	28 41 12.5	0.528
10	18 8 31.63	2.3296	28 40 36.3	0.678
11	18 10 51.45	2.3311	28 39 51.1	0.828
12	18 13 11.36	2.3325	28 38 57.0	0.978
13	18 15 31.35	2.3339	28 37 53.8	1.129
14	18 17 51.42	2.3352	28 36 41.5	1.280
15	18 20 11.57	2.3364	28 35 20.2	1.432
16	18 22 31.78	2.3375	28 33 49.7	1.584
17	18 24 52.05	2.3385	28 32 10.1	1.736
18	18 27 12.37	2.3393	28 30 21.4	1.888
19	18 29 32.75	2.3400	28 28 23.5	2.040
20	18 31 53.17	2.3407	28 26 16.5	2.192
21	18 34 13.64	2.3413	28 24 0.5	2.344
22	18 36 34.14	2.3418	28 21 35.3	2.496
23	18 38 54.67	2.3423	S.28 19 0.9	2.649

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 41 15.22	2.3427	S.28 16 17.3	2.802
1	18 43 35.79	2.3430	28 13 24.6	2.955
2	18 45 56.37	2.3432	28 10 22.7	3.108
3	18 48 16.96	2.3433	28 7 11.6	3.261
4	18 50 37.55	2.3432	28 3 51.4	3.414
5	18 52 58.13	2.3430	28 0 22.0	3.567
6	18 55 18.70	2.3428	27 56 43.3	3.720
7	18 57 39.25	2.3425	27 52 55.5	3.872
8	18 59 59.78	2.3421	27 48 58.6	4.024
9	19 2 20.29	2.3416	27 44 52.6	4.176
10	19 4 40.77	2.3410	27 40 37.5	4.328
11	19 7 1.21	2.3404	27 36 13.2	4.480
12	19 9 21.62	2.3397	27 31 39.7	4.632
13	19 11 41.98	2.3389	27 26 57.1	4.784
14	19 14 2.29	2.3381	27 22 5.4	4.936
15	19 16 22.54	2.3372	27 17 4.7	5.088
16	19 18 42.74	2.3362	27 11 54.8	5.239
17	19 21 2.87	2.3351	27 6 35.9	5.390
18	19 23 22.93	2.3339	27 1 8.0	5.541
19	19 25 42.93	2.3326	26 55 31.0	5.692
20	19 28 2.85	2.3313	26 49 45.0	5.842
21	19 30 22.68	2.3299	26 43 50.0	5.992
22	19 32 42.42	2.3284	26 37 46.1	6.141
23	19 35 2.06	2.3268	26 31 33.2	6.290
24	19 37 21.61	2.3251	S.26 25 11.3	6.439

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	19 37 21.61	2.3251	S.26 25 11.3	6.439
1	19 39 41.06	2.3233	26 18 40.5	6.587
2	19 42 0.41	2.3215	26 12 0.9	6.735
3	19 44 19.65	2.3197	26 5 12.4	6.882
4	19 46 38.77	2.3178	25 58 15.0	7.029
5	19 48 57.77	2.3158	25 51 8.9	7.176
6	19 51 16.65	2.3137	25 43 54.0	7.322
7	19 53 35.41	2.3116	25 36 30.4	7.468
8	19 55 54.05	2.3095	25 28 58.1	7.613
9	19 58 12.55	2.3073	25 21 17.1	7.757
10	20 0 30.92	2.3050	25 13 27.4	7.900
11	20 2 49.15	2.3027	25 5 29.1	8.043
12	20 5 7.24	2.3004	24 57 22.2	8.185
13	20 7 25.18	2.2980	24 49 6.7	8.327
14	20 9 42.98	2.2955	24 40 42.8	8.468
15	20 12 0.63	2.2929	24 32 10.5	8.608
16	20 14 18.13	2.2903	24 23 29.8	8.748
17	20 16 35.47	2.2877	24 14 40.7	8.887
18	20 18 52.66	2.2851	24 5 43.3	9.026
19	20 21 9.69	2.2824	23 56 37.5	9.164
20	20 23 26.55	2.2797	23 47 23.5	9.301
21	20 25 43.25	2.2770	23 38 1.4	9.437
22	20 27 59.78	2.2742	23 28 31.1	9.572
23	20 30 16.14	2.2714	S.23 18 52.8	9.706

TUESDAY, SEPT. 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 32 32.33	2.2686	S.23 9 6.4	9.840

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, . .	5	6	28.8
☾ Last Quarter, . .	12	5	42.2
● New Moon, . .	19	4	26.4
☽ First Quarter, .	27	3	4.5

	Day.	h.
☾ Perigee, ...	12	2.6
☾ Apogee, ...	26	2.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	SUN	W.	129 32 32	3325	130 56 14	3316	132 20 7	3306	133 44 12	3296
	Spica	W.	56 56 20	2954	58 27 31	2944	59 58 54	2934	61 30 29	2924
	α Aquilæ	E.	52 11 9	4456	51 6 38	4512	50 2 57	4577	49 0 12	4646
	Fomalhaut	E.	72 21 35	3220	70 55 49	3214	69 29 56	3209	68 3 58	3205
	α Pegasi	E.	94 11 8	3223	92 45 26	3213	91 19 32	3203	89 53 26	3193
2	Spica	W.	69 11 42	2871	70 44 38	2859	72 17 49	2848	73 51 15	2837
	Antares	W.	23 17 15	2871	24 50 11	2860	26 23 21	2848	27 56 46	2837
	Fomalhaut	E.	60 53 7	3193	59 26 49	3192	58 0 30	3192	56 34 11	3193
	α Pegasi	E.	82 40 2	3144	81 12 46	3136	79 45 20	3128	78 17 44	3119
	α Arietis	E.	124 51 12	2916	123 19 14	2903	121 46 59	2891	120 14 28	2878
3	Spica	W.	81 42 8	2777	83 17 6	2764	84 52 21	2752	86 27 52	2740
	Antares	W.	35 47 41	2777	37 22 39	2765	38 57 53	2753	40 33 23	2740
	Fomalhaut	E.	49 23 23	3219	47 57 36	3228	46 32 0	3241	45 6 39	3256
	α Pegasi	E.	70 57 15	3082	69 28 44	3076	68 0 5	3071	66 31 20	3066
	α Arietis	E.	112 27 53	2812	110 53 41	2799	109 19 12	2786	107 44 26	2773
4	Spica	W.	94 29 30	2679	96 6 38	2666	97 44 3	2655	99 21 44	2642
	Antares	W.	48 35 0	2679	50 12 8	2666	51 49 33	2655	53 27 14	2642
	Fomalhaut	E.	38 6 0	3395	36 43 38	3440	35 22 7	3494	34 1 36	3556
	α Pegasi	E.	59 6 33	3057	57 37 31	3059	56 8 31	3062	54 39 35	3067
	α Arietis	E.	99 46 18	2710	98 9 52	2698	96 33 9	2685	94 56 9	2673
5	Spica	W.	107 34 14	2583	109 13 32	2572	110 53 5	2561	112 32 53	2551
	Antares	W.	61 39 44	2584	63 19 1	2572	64 58 34	2561	66 38 22	2551
	α Pegasi	E.	47 17 11	3123	45 49 29	3143	44 22 12	3166	42 55 22	3195
	α Arietis	E.	86 47 8	2614	85 8 32	2603	83 29 41	2593	81 50 36	2582
	Aldebaran	E.	117 33 21	2672	115 56 3	2659	114 18 28	2646	112 40 35	2633
6	Antares	W.	75 1 6	2498	76 42 22	2488	78 23 52	2479	80 5 35	2470
	α Aquilæ	W.	39 9 54	5563	40 0 1	5325	40 52 50	5118	41 48 14	4931
	α Pegasi	E.	35 51 50	3430	34 30 7	3505	33 9 48	3592	31 51 5	3696
	α Arietis	E.	73 31 34	2532	71 51 5	2522	70 10 23	2513	68 29 28	2505
	Aldebaran	E.	104 26 54	2573	102 47 22	2562	101 7 35	2552	99 27 34	2542
7	Antares	W.	88 37 20	2426	90 20 17	2418	92 3 26	2411	93 46 45	2404
	α Aquilæ	W.	46 59 9	4228	48 7 9	4122	49 16 49	4027	50 28 2	3941
	α Arietis	E.	60 2 7	2468	58 20 9	2461	56 38 1	2455	54 55 45	2450
	Aldebaran	E.	91 4 9	2497	89 22 52	2489	87 41 24	2482	85 59 45	2475
	Venus	E.	113 33 36	2825	111 59 40	2816	110 25 32	2807	108 51 13	2797
8	Antares	W.	102 25 52	2371	104 10 9	2365	105 54 34	2359	107 39 7	2353
	α Aquilæ	W.	56 43 54	3600	58 2 27	3549	59 21 57	3501	60 42 20	3457
	α Arietis	E.	46 22 45	2429	44 39 52	2428	42 56 57	2428	41 14 2	2428
	Aldebaran	E.	77 29 15	2445	75 46 45	2441	74 4 9	2437	72 21 27	2433
	Venus	E.	100 56 57	2760	99 21 36	2753	97 46 6	2745	96 10 26	2739
	Pollux	E.	120 47 55	2373	119 3 42	2368	117 19 21	2362	115 34 52	2357
	Saturn	E.	121 16 31	2431	119 33 40	2424	117 50 39	2417	116 7 29	2411
9	α Aquilæ	W.	67 35 24	3285	68 59 53	3259	70 24 53	3235	71 50 21	3213
	Fomalhaut	W.	38 20 24	2986	39 50 54	2936	41 22 27	2891	42 54 58	2852
	α Arietis	E.	32 39 29	2440	30 56 51	2450	29 14 28	2464	27 32 24	2480
	Aldebaran	E.	63 46 45	2420	62 3 39	2419	60 20 32	2419	58 37 25	2419
	Venus	E.	88 10 18	2714	86 33 57	2710	84 57 31	2707	83 21 1	2708

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Sun	W.	135 8 28	3286	136 32 56	3276	137 57 36	3265	139 22 29	3254
	Spica	W.	63 2 17	2914	64 34 18	2904	66 6 32	2893	67 39 0	2882
	a Aquilæ	E.	47 58 27	4723	46 57 47	4809	45 58 18	4902	45 0 5	5008
	Fomalhaut	E.	66 37 55	3202	65 11 48	3198	63 45 37	3196	62 19 23	3194
	a Pegasi	E.	88 27 8	3183	87 0 40	3173	85 33 58	3164	84 7 6	3154
2	Spica	W.	75 24 55	2825	76 58 50	2814	78 33 0	2801	80 7 26	2789
	Antares	W.	29 30 26	2825	31 4 21	2813	32 38 32	2801	34 12 59	2789
	Fomalhaut	E.	55 7 54	3195	53 41 39	3198	52 15 27	3203	50 49 21	3209
	a Pegasi	E.	76 49 58	3110	75 22 1	3102	73 53 54	3096	72 25 39	3088
	a Arietis	E.	118 41 41	2866	117 8 39	2854	115 35 21	2841	114 1 46	2827
3	Spica	W.	88 3 39	2728	89 39 42	2715	91 16 2	2703	92 52 38	2691
	Antares	W.	42 9 10	2728	43 45 13	2716	45 21 32	2703	46 58 8	2691
	Fomalhaut	E.	43 41 38	3276	42 16 59	3299	40 52 46	3325	39 29 4	3356
	a Pegasi	E.	65 2 29	3063	63 33 34	3060	62 4 36	3058	60 35 35	3057
	a Arietis	E.	106 9 23	2760	104 34 2	2747	102 58 24	2734	101 22 29	2722
4	Spica	W.	100 59 42	2630	102 37 56	2618	104 16 26	2607	105 55 12	2596
	Antares	W.	55 5 12	2630	56 43 26	2618	58 21 56	2607	60 0 42	2595
	Fomalhaut	E.	32 42 13	3629	31 24 10	3716	30 7 40	3821	28 53 0	3946
	a Pegasi	E.	53 10 45	3074	51 42 4	3082	50 13 32	3092	48 45 13	3106
	a Arietis	E.	93 18 53	2660	91 41 20	2649	90 3 32	2638	88 25 28	2626
5	Spica	W.	114 12 56	2540	115 53 14	2529	117 33 47	2518	119 14 35	2508
	Antares	W.	68 18 25	2540	69 58 43	2529	71 39 16	2518	73 20 4	2508
	a Pegasi	E.	41 29 7	3228	40 3 31	3267	38 38 41	3313	37 14 44	3367
	a Arietis	E.	80 11 16	2572	78 31 42	2561	76 51 53	2551	75 11 50	2541
	Aldebaran	E.	111 2 25	2620	109 23 57	2607	107 45 12	2596	106 6 11	2584
6	Antares	W.	81 47 31	2460	83 29 40	2452	85 12 1	2443	86 54 35	2435
	a Aquilæ	W.	42 46 4	4760	43 46 13	4607	44 48 32	4466	45 52 54	4341
	a Pegasi	E.	30 34 14	3818	29 19 30	3963	28 7 14	4138	26 57 49	4351
	a Arietis	E.	66 48 22	2497	65 7 4	2489	63 25 35	2481	61 43 56	2475
	Aldebaran	E.	97 47 19	2532	96 6 51	2522	94 26 9	2514	92 45 15	2505
7	Antares	W.	95 30 14	2397	97 13 53	2389	98 57 43	2382	100 41 43	2376
	a Aquilæ	W.	51 40 40	3860	52 54 40	3787	54 9 56	3719	55 26 23	3659
	a Arietis	E.	53 13 22	2445	51 30 52	2441	49 48 15	2437	48 5 33	2433
	Aldebaran	E.	84 17 57	2469	82 36 0	2462	80 53 53	2456	79 11 38	2450
	Venus	E.	107 16 43	2790	105 42 2	2782	104 7 11	2774	102 32 9	2766
8	Antares	W.	109 23 49	2348	111 8 39	2343	112 53 36	2338	114 38 40	2334
	a Aquilæ	W.	62 3 32	3416	63 25 30	3379	64 48 10	3345	66 11 29	3314
	a Arietis	E.	39 31 7	2428	37 48 12	2427	36 5 16	2428	34 22 20	2431
	Aldebaran	E.	70 38 39	2429	68 55 46	2426	67 12 49	2424	65 29 48	2423
	Venus	E.	94 34 38	2734	92 58 43	2729	91 22 41	2724	89 46 33	2719
	Pollux	E.	113 50 15	2353	112 5 32	2347	110 20 41	2342	108 35 43	2337
	Saturn	E.	114 24 10	2405	112 40 42	2400	110 57 7	2395	109 13 25	2390
9	a Aquilæ	W.	73 16 15	3198	74 42 32	3176	76 9 10	3160	77 36 7	3146
	Fomalhaut	W.	44 28 20	2816	46 2 27	2783	47 37 17	2754	49 12 45	2729
	a Arietis	E.	25 50 42	2497	24 9 25	2519	22 28 38	2543	20 48 24	2570
	Aldebaran	E.	56 54 18	2420	55 11 12	2422	53 28 8	2423	51 45 6	2426
	Venus	E.	81 44 25	2700	80 7 45	2697	78 31 1	2694	76 54 12	2691

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Pollux E.	106 50 38	2333	105 5 27	2328	103 20 9	2324	101 34 45	2321
	Saturn E.	107 29 36	2385	105 45 40	2382	104 1 39	2378	102 17 32	2373
	Sun E.	132 33 47	2619	130 55 59	2616	129 18 6	2612	127 40 7	2608
10	*a* Aquilæ W.	79 3 21	3133	80 30 51	3121	81 58 35	3112	83 26 30	3105
	Fomalhaut W.	50 48 46	2706	52 25 19	2684	54 2 20	2666	55 39 46	2649
	a Pegasi W.	31 30 44	3442	32 52 13	3335	34 15 44	3242	35 41 3	3163
	Aldebaran E.	50 2 9	2430	48 19 17	2435	46 36 32	2441	44 53 55	2448
	Venus E.	75 17 20	2689	73 40 25	2687	72 3 28	2686	70 26 29	2684
	Pollux E.	92 46 38	2307	91 0 49	2304	89 14 56	2302	87 28 59	2300
	Saturn E.	93 35 38	2357	91 51 2	2355	90 6 23	2353	88 21 41	2351
	Sun E.	119 28 59	2620	117 50 31	2617	116 11 59	2615	114 33 24	2612
11	*a* Aquilæ W.	90 47 46	3087	92 16 11	3088	93 44 35	3091	95 12 55	3096
	Fomalhaut W.	63 52 4	2585	65 31 20	2575	67 10 49	2567	68 50 29	2560
	a Pegasi W.	43 8 9	2887	44 40 44	2851	46 14 6	2817	47 48 12	2788
	Aldebaran E.	36 24 2	2507	34 42 59	2527	33 2 24	2550	31 22 20	2577
	Venus E.	62 21 8	2681	60 44 3	2682	59 6 59	2683	57 29 56	2684
	Pollux E.	78 38 37	2292	76 52 26	2291	75 6 14	2290	73 20 0	2290
	Saturn E.	79 37 28	2344	77 52 32	2343	76 7 35	2342	74 22 37	2342
	Sun E.	106 19 40	2603	104 40 49	2601	103 1 56	2600	101 23 1	2599
12	*a* Aquilæ W.	102 32 46	3130	104 0 8	3152	105 27 15	3167	106 54 4	3183
	Fomalhaut W	77 11 1	2535	78 51 26	2532	80 31 55	2529	82 12 28	2527
	a Pegasi W.	55 47 8	2680	57 24 15	2665	59 1 42	2652	60 39 27	2639
	Venus E.	49 25 10	2694	47 48 22	2697	46 11 38	2701	44 35 0	2705
	Pollux E.	64 28 43	2289	62 42 27	2289	60 56 11	2289	59 9 55	2289
	Saturn E.	65 37 38	2341	63 52 38	2342	62 7 40	2344	60 22 44	2347
	Sun E.	93 8 10	2596	91 29 10	2597	89 50 11	2597	88 11 12	2597
13	Fomalhaut W.	90 35 32	2527	92 16 8	2530	93 56 40	2533	95 37 8	2536
	a Pegasi W.	68 51 48	2596	70 30 48	2591	72 9 56	2586	73 49 10	2583
	a Arietis W.	25 23 18	2449	27 5 43	2433	28 48 31	2418	30 31 40	2407
	Venus E.	36 33 33	2738	34 57 44	2748	33 22 8	2760	31 46 48	2774
	Pollux E.	50 18 51	2294	48 32 43	2296	46 46 37	2297	45 0 33	2299
	Saturn E.	51 38 30	2353	49 53 47	2355	48 9 8	2358	46 24 33	2362
	Sun E.	79 56 25	2601	78 17 32	2602	76 38 40	2604	74 59 50	2606
14	Fomalhaut W.	103 58 13	2558	105 38 6	2565	107 17 49	2574	108 57 20	2583
	a Pegasi W.	82 6 16	2574	83 45 46	2575	85 25 15	2577	87 4 42	2578
	a Arietis W.	39 10 27	2377	40 54 35	2375	42 38 46	2373	44 23 0	2371
	Pollux E.	36 10 58	2311	34 25 14	2314	32 39 35	2317	30 54 0	2321
	Saturn E.	37 42 59	2384	35 59 1	2389	34 15 11	2396	32 31 31	2404
	Sun E.	66 46 18	2616	65 7 45	2618	63 29 15	2621	61 50 49	2625
15	*a* Pegasi W.	95 21 1	2598	96 59 59	2604	98 38 49	2610	100 17 30	2618
	a Arietis W.	53 4 19	2374	54 48 31	2376	56 32 41	2378	58 16 48	2381
	Aldebaran W.	23 44 42	2778	25 19 39	2726	26 55 44	2687	28 32 42	2652
	Saturn E.	23 56 39	2466	22 14 37	2484	20 33 1	2512	18 52 4	2549
	Sun E.	53 39 51	2643	52 1 55	2648	50 24 5	2652	48 46 21	2657
16	*a* Pegasi W.	108 28 5	2666	110 5 30	2679	111 42 38	2692	113 19 29	2706
	a Arietis W.	66 56 11	2400	68 39 46	2404	70 23 15	2410	72 6 36	2415
	Aldebaran W.	36 46 20	2561	38 26 8	2553	40 6 8	2546	41 46 17	2540
	Sun E.	40 39 31	2687	39 2 34	2694	37 25 46	2701	35 49 8	2709

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Pollux	E.	99 49 16	2318	98 3 43	2315	96 18 6	2312	94 32 24	2309
	Saturn	E.	100 33 19	2370	98 49 1	2366	97 4 38	2363	95 20 10	2360
	Sun	E.	126 2 3	2635	124 23 55	2630	122 45 41	2626	121 7 22	2624
10	*a* Aquilæ	W.	84 54 33	3099	86 22 44	3093	87 51 2	3091	89 19 23	3089
	Fomalhaut	W.	57 17 35	2633	58 55 45	2618	60 34 15	2606	62 13 2	2595
	a Pegasi	W.	37 7 56	3092	38 36 15	3032	40 5 48	2977	41 36 29	2931
	Aldebaran	E.	43 11 28	2456	41 29 13	2466	39 47 12	2477	38 5 27	2492
	Venus	E.	68 49 28	2683	67 12 25	2681	65 35 20	2681	63 58 14	2681
	Pollux	E.	85 42 59	2298	83 56 57	2297	82 10 53	2295	80 24 46	2294
	Saturn	E.	86 36 55	2349	84 52 7	2347	83 7 16	2346	81 22 23	2344
	Sun	E.	112 54 45	2610	111 16 3	2607	109 37 18	2605	107 58 30	2604
11	*a* Aquilæ	W.	96 41 10	3101	98 9 18	3107	99 37 19	3116	101 5 9	3127
	Fomalhaut	W.	70 30 19	2553	72 10 19	2547	73 50 27	2543	75 30 41	2538
	a Pegasi	W.	49 22 56	2761	50 58 15	2737	52 34 6	2716	54 10 24	2697
	Aldebaran	E.	29 42 54	2610	28 4 13	2649	26 26 25	2698	24 49 42	2756
	Venus	E.	55 52 53	2685	54 15 53	2687	52 38 56	2689	51 2 2	2691
	Pollux	E.	71 33 46	2289	69 47 31	2289	68 1 15	2289	66 14 59	2289
	Saturn	E.	72 37 39	2341	70 52 39	2340	69 7 38	2341	67 22 38	2341
	Sun	E.	99 44 5	2598	98 5 7	2598	96 26 9	2597	94 47 10	2596
12	*a* Aquilæ	W.	108 20 33	3202	109 46 40	3233	111 12 22	3246	112 37 37	3270
	Fomalhaut	W.	83 53 3	2526	85 33 40	2526	87 14 17	2526	88 54 54	2525
	a Pegasi	W.	62 17 29	2628	63 55 46	2619	65 34 15	2610	67 12 56	2602
	Venus	E.	42 58 27	2710	41 22 1	2716	39 45 43	2722	38 9 33	2730
	Pollux	E.	57 23 40	2290	55 37 26	2291	53 51 13	2291	52 5 1	2293
	Saturn	E.	58 37 50	2346	56 52 57	2347	55 8 6	2348	53 23 17	2350
	Sun	E.	86 32 13	2598	84 53 15	2598	83 14 17	2599	81 35 20	2600
13	Fomalhaut	W.	97 17 32	2539	98 57 51	2543	100 38 4	2547	102 18 12	2552
	a Pegasi	W.	75 28 29	2580	77 7 52	2577	78 47 18	2576	80 26 46	2574
	a Arietis	W.	32 15 5	2398	33 58 42	2391	35 42 29	2385	37 26 25	2381
	Venus	E.	30 11 46	2790	28 37 5	2808	27 2 47	2827	25 28 54	2850
	Pollux	E.	43 14 32	2300	41 28 33	2303	39 42 38	2305	37 56 46	2308
	Saturn	E.	44 40 3	2365	42 55 38	2368	41 11 18	2373	39 27 5	2378
	Sun	E.	73 21 2	2607	71 42 17	2609	70 3 34	2611	68 24 54	2614
14	Fomalhaut	W.	110 36 39	2591	112 15 46	2601	113 54 39	2612	115 33 17	2624
	a Pegasi	W.	88 44 7	2581	90 23 28	2585	92 2 44	2588	93 41 55	2592
	a Arietis	W.	46 7 16	2371	47 51 32	2371	49 35 49	2371	51 20 5	2373
	Pollux	E.	29 8 31	2324	27 23 7	2329	25 37 50	2335	23 52 41	2340
	Saturn	E.	30 48 2	2412	29 4 45	2424	27 21 44	2437	25 39 2	2450
	Sun	E.	60 12 28	2628	58 34 11	2632	56 55 59	2635	55 17 52	2640
15	*a* Pegasi	W.	101 56 1	2626	103 34 21	2635	105 12 29	2644	106 50 24	2655
	a Arietis	W.	60 0 50	2384	61 44 48	2387	63 28 41	2391	65 12 29	2395
	Aldebaran	W.	30 10 26	2626	31 48 45	2604	33 27 35	2587	35 6 48	2573
	Saturn	E.	17 11 59	2595	15 32 58	2652	13 55 13	2716	12 18 55	2798
	Sun	E.	47 8 44	2663	45 31 15	2669	43 53 53	2674	42 16 38	2680
16	*a* Pegasi	W.	114 56 1	2722	116 32 11	2739	118 7 59	2756	119 43 24	2775
	a Arietis	W.	73 49 49	2421	75 32 54	2426	77 15 51	2433	78 58 39	2440
	Aldebaran	W.	43 26 34	2537	45 6 56	2535	46 47 20	2535	48 27 45	2534
	Sun	E.	34 12 40	2717	32 36 23	2725	31 0 16	2734	29 24 21	2744

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
21	Sun	W.	21 47 47	3126	23 15 25	3137	24 42 50	3147	26 10 3	3157
	Antares	E.	77 45 54	2753	76 10 25	2766	74 35 12	2779	73 0 16	2790
22	Sun	W.	33 22 55	3213	34 48 49	3224	36 14 30	3235	37 39 58	3247
	Antares	E.	65 9 25	2849	63 36 1	2861	62 2 52	2871	60 29 56	2883
	α Aquilæ	E.	113 40 33	3829	112 26 1	3819	111 11 18	3810	109 56 26	3802
23	Sun	W.	44 44 1	3300	46 8 12	3310	47 32 11	3320	48 55 59	3330
	Antares	E.	52 48 47	2935	51 17 13	2946	49 45 52	2954	48 14 42	2963
	α Aquilæ	E.	103 40 41	3786	102 25 24	3785	101 10 6	3787	99 54 50	3788
24	Sun	W.	55 52 20	3373	57 15 7	3380	58 37 46	3388	60 0 16	3395
	Antares	E.	40 41 36	3005	39 11 29	3012	37 41 31	3018	36 11 41	3026
	α Aquilæ	E.	93 39 5	3806	92 24 9	3812	91 9 19	3818	89 54 35	3823
	Fomalhaut	E.	121 2 41	3330	119 39 4	3328	118 15 25	3326	116 51 44	3325
25	Sun	W.	66 51 0	3423	68 12 51	3427	69 34 37	3431	70 56 19	3434
	Spica	W.	17 10 16	3052	18 39 24	3056	20 8 28	3058	21 37 29	3061
	Antares	E.	28 44 25	3052	27 15 16	3056	25 46 12	3060	24 17 13	3062
	α Aquilæ	E.	83 42 45	3864	82 28 49	3874	81 15 3	3884	80 1 27	3895
	Fomalhaut	E.	109 52 54	3320	108 29 6	3319	107 5 17	3319	105 41 27	3318
26	Sun	W.	77 44 4	3443	79 5 32	3443	80 27 0	3443	81 48 28	3442
	Spica	W.	29 1 43	3071	30 30 28	3071	31 59 13	3070	33 27 59	3069
	α Aquilæ	E.	73 56 23	3956	72 44 0	3972	71 31 53	3988	70 20 2	4005
	Fomalhaut	E.	98 42 2	3313	97 18 6	3312	95 54 9	3311	94 30 10	3309
	α Pegasi	E.	120 16 34	3430	118 54 51	3421	117 32 58	3411	116 10 54	3401
27	Sun	W.	88 36 15	3431	89 57 57	3426	91 19 44	3422	92 41 36	3416
	Spica	W.	40 52 11	3060	42 21 10	3056	43 50 14	3052	45 19 23	3047
	α Aquilæ	E.	64 25 13	4106	63 15 17	4130	62 5 44	4156	60 56 35	4184
	Fomalhaut	E.	87 29 40	3298	86 5 26	3295	84 41 9	3292	83 16 48	3288
	α Pegasi	E.	109 18 0	3358	107 54 56	3350	106 31 42	3341	105 8 18	3332
28	Sun	W.	99 32 32	3385	100 55 6	3376	102 17 50	3367	103 40 44	3358
	Spica	W.	52 46 43	3018	54 16 34	3009	55 46 35	3002	57 16 45	2993
	α Aquilæ	E.	55 18 16	4362	54 12 20	4407	53 7 5	4456	52 2 34	4511
	Fomalhaut	E.	76 14 7	3272	74 49 23	3268	73 24 34	3264	71 59 41	3260
	α Pegasi	E.	98 8 48	3288	96 44 23	3280	95 19 48	3270	93 55 1	3261
29	Sun	W.	110 37 56	3306	112 2 0	3295	113 26 17	3283	114 50 48	3271
	Spica	W.	64 50 20	2946	66 21 40	2935	67 53 14	2924	69 25 2	2913
	Antares	W.	18 56 3	2917	20 27 22	2936	21 58 55	2925	23 30 42	2913
	α Aquilæ	E.	46 53 18	4869	45 54 38	4962	44 57 13	5066	44 1 9	5182
	Fomalhaut	E.	64 54 12	3243	63 28 54	3241	62 3 33	3239	60 38 10	3238
	α Pegasi	E.	86 48 26	3214	85 22 34	3204	83 56 30	3194	82 30 14	3185
	α Arietis	E.	129 11 8	2994	127 40 48	2981	126 10 12	2969	124 39 21	2957
30	Sun	W.	121 57 9	3204	123 23 14	3189	124 49 36	3174	126 16 16	3159
	Spica	W.	77 7 48	2852	78 41 9	2838	80 14 48	2824	81 48 45	2810
	Antares	W.	31 13 25	2851	32 46 47	2838	34 20 26	2825	35 54 22	2811
	α Pegasi	E.	75 16 8	3138	73 48 45	3130	72 21 12	3122	70 53 29	3114
	α Arietis	E.	117 0 53	2885	115 28 18	2873	113 55 25	2859	112 22 14	2845
31	α Arietis	E.	104 31 28	2769	102 56 19	2753	101 20 50	2738	99 45 1	2723

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight. ° ′ ″	P. L. of Diff.	XVh. ° ′ ″	P. L. of Diff.	XVIIIh. ° ′ ″	P. L. of Diff.	XXIh. ° ′ ″	P. L. of Diff.
21	Sun	W.	27 37 4	3168	29 3 52	3178	30 30 27	3190	31 56 48	3202
	Antares	E.	71 25 35	2802	69 51 10	2814	68 17 0	2826	66 43 5	2837
22	Sun	W.	39 5 12	3258	40 30 13	3269	41 55 1	3279	43 19 37	3289
	Antares	E.	58 57 15	2894	57 24 48	2904	55 52 34	2915	54 20 34	2925
	a Aquilæ	E.	108 41 26	3796	107 26 20	3792	106 11 10	3790	104 55 57	3787
23	Sun	W.	50 19 36	3339	51 43 2	3348	53 6 18	3357	54 29 24	3365
	Antares	E.	46 43 43	2973	45 12 56	2981	43 42 19	2989	42 11 53	2997
	a Aquilæ	E.	98 39 35	3791	97 24 23	3792	96 9 13	3796	94 54 7	3800
24	Sun	W.	61 22 38	3401	62 44 53	3407	64 7 2	3413	65 29 4	3418
	Antares	E.	34 42 0	3031	33 12 26	3037	31 42 59	3043	30 13 39	3047
	a Aquilæ	E.	88 39 57	3831	87 25 27	3838	86 11 4	3847	84 56 50	3856
	Fomalhaut	E.	115 28 1	3323	114 4 16	3321	112 40 29	3321	111 16 42	3320
25	Sun	W.	72 17 57	3437	73 39 32	3438	75 1 5	3440	76 22 35	3442
	Spica	W.	23 6 26	3065	24 35 19	3067	26 4 9	3069	27 32 57	3070
	Antares	E.	22 48 17	3065	21 19 24	3068	19 50 35	3069	18 21 48	3071
	a Aquilæ	E.	78 48 2	3907	77 34 49	3919	76 21 48	3930	75 8 59	3943
	Fomalhaut	E.	104 17 36	3317	102 53 45	3316	101 29 52	3315	100 5 58	3314
26	Sun	W.	83 9 57	3440	84 31 28	3438	85 53 1	3436	87 14 36	3433
	Spica	W.	34 56 46	3069	36 25 33	3067	37 54 23	3065	39 23 16	3063
	a Aquilæ	E.	69 8 27	4023	67 57 10	4041	66 46 11	4062	65 35 32	4082
	Fomalhaut	E.	93 6 9	3306	91 42 5	3305	90 17 59	3303	88 53 51	3300
	a Pegasi	E.	114 48 39	3393	113 26 14	3384	112 3 39	3376	110 40 54	3367
27	Sun	W.	94 3 34	3411	95 25 38	3406	96 47 48	3399	98 10 6	3392
	Spica	W.	46 48 37	3042	48 17 58	3036	49 47 26	3030	51 17 1	3025
	a Aquilæ	E.	59 47 54	4214	58 39 41	4247	57 31 59	4282	56 24 50	4320
	Fomalhaut	E.	81 52 23	3286	80 27 55	3283	79 3 24	3279	77 38 48	3275
	a Pegasi	E.	103 44 44	3324	102 21 0	3315	100 57 6	3306	99 33 2	3296
28	Sun	W.	105 3 48	3350	106 27 2	3339	107 50 28	3329	109 14 6	3319
	Spica	W.	58 47 6	2985	60 17 37	2976	61 48 20	2967	63 19 14	2958
	a Aquilæ	E.	50 58 52	4569	49 56 0	4633	48 54 4	4704	47 53 8	4782
	Fomalhaut	E.	70 34 43	3257	69 9 41	3254	67 44 36	3250	66 19 26	3247
	a Pegasi	E.	92 30 4	3252	91 4 56	3243	89 39 38	3233	88 14 8	3223
29	Sun	W.	116 15 33	3259	117 40 33	3245	119 5 49	3231	120 31 21	3218
	Spica	W.	70 57 4	2901	72 29 21	2889	74 1 54	2876	75 34 43	2864
	Antares	W.	25 2 44	2901	26 35 1	2890	28 7 33	2877	29 40 21	2865
	a Aquilæ	E.	43 6 34	5314	42 13 37	5457	41 22 23	5614	40 32 58	5789
	Fomalhaut	E.	59 12 46	3236	57 47 19	3235	56 21 51	3236	54 56 24	3236
	a Pegasi	E.	81 3 47	3176	79 37 9	3167	78 10 20	3157	76 43 19	3148
	a Arietis	E.	123 8 14	2943	121 36 50	2930	120 5 9	2916	118 33 10	2901
30	Sun	W.	127 43 14	3144	129 10 30	3129	130 38 4	3114	132 5 57	3097
	Spica	W.	83 23 0	2796	84 57 33	2781	86 32 26	2767	88 7 37	2753
	Antares	W.	37 28 36	2796	39 3 9	2782	40 38 1	2768	42 13 11	2753
	a Pegasi	E.	69 25 36	3105	67 57 33	3098	66 29 21	3091	65 1 1	3086
	a Arietis	E.	110 48 44	2830	109 14 55	2815	107 40 46	2799	106 6 17	2784
31	a Arietis	E.	98 8 52	2707	96 32 21	2691	94 55 29	2675	93 18 16	2659

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Tues.	1	10 42 12.64	9.070	N. 8 13 18.3	54.53	15 53.86	64.41	0 10.33	0.786
Wed.	2	10 45 50.12	9.057	7 51 25.9	54.85	15 54.10	64.37	0 29.36	0.798
Thur.	3	10 49 27.32	9.046	7 29 26.0	55.16	15 54.34	64.33	0 48.66	0.810
Fri.	4	10 53 4.26	9.036	7 7 18.8	55.46	15 54.58	64.29	1 8.22	0.820
Sat.	5	10 56 40.96	9.027	6 45 4.5	55.75	15 54.82	64.26	1 28.02	0.829
Sun.	6	11 0 17.45	9.018	6 22 43.6	56.02	15 55.06	64.23	1 48.03	0.838
Mon.	7	11 3 53.75	9.011	6 0 16.3	56.28	15 55.30	64.20	2 8.23	0.846
Tues.	8	11 7 29.87	9.004	5 37 42.8	56.53	15 55.54	64.17	2 28.61	0.852
Wed.	9	11 11 5.84	8.998	5 15 3.5	56.76	15 55.79	64.15	2 49.14	0.858
Thur.	10	11 14 41.67	8.992	4 52 18.8	56.98	15 56.04	64.13	3 9.81	0.863
Fri.	11	11 18 17.39	8.988	4 29 29.1	57.19	15 56.29	64.11	3 30.58	0.867
Sat.	12	11 21 53.01	8.985	4 6 34.5	57.39	15 56.54	64.09	3 51.44	0.871
Sun.	13	11 25 28.55	8.982	3 43 35.3	57.57	15 56.79	64.08	4 12.39	0.874
Mon.	14	11 29 4.05	8.980	3 20 31.9	57.73	15 57.04	64.07	4 33.39	0.876
Tues.	15	11 32 39.51	8.979	2 57 24.7	57.88	15 57.30	64.06	4 54.43	0.878
Wed.	16	11 36 14.95	8.979	2 34 14.2	58.02	15 57.56	64.06	5 15.49	0.878
Thur.	17	11 39 50.39	8.979	2 11 0.6	58.14	15 57.82	64.06	5 36.55	0.878
Fri.	18	11 43 25.84	8.980	1 47 44.1	58.25	15 58.08	64.06	5 57.59	0.877
Sat.	19	11 47 1.30	8.981	1 24 25.2	58.34	15 58.35	64.06	6 18.61	0.876
Sun.	20	11 50 36.81	8.982	1 1 4.4	58.41	15 58.62	64.07	6 39.61	0.873
Mon.	21	11 54 12.39	8.986	0 37 42.1	58.47	15 58.90	64.08	7 0.53	0.870
Tues.	22	11 57 48.05	8.990	N. 0 14 18.5	58.52	15 59.16	64.09	7 21.36	0.866
Wed.	23	12 1 23.81	8.994	S. 0 9 6.1	58.55	15 59.44	64.11	7 42.10	0.862
Thur.	24	12 4 59.69	8.999	0 32 31.3	58.56	15 59.72	64.13	8 2.71	0.857
Fri.	25	12 8 35.70	9.005	0 55 56.6	58.56	16 0.00	64.16	8 23.20	0.851
Sat.	26	12 12 11.87	9.012	1 19 21.8	58.55	16 0.28	64.19	8 43.53	0.844
Sun.	27	12 15 48.21	9.019	1 42 46.5	58.52	16 0.56	64.22	9 3.69	0.837
Mon.	28	12 19 24.73	9.027	2 6 10.2	58.48	16 0.84	64.26	9 23.65	0.828
Tues.	29	12 23 1.48	9.037	2 29 32.7	58.42	16 1.12	64.30	9 43.40	0.819
Wed.	30	12 26 38.47	9.048	2 52 53.8	58.35	16 1.40	64.34	10 2.94	0.809
Thur.	31	12 30 15.72	9.059	S. 3 16 13.0	58.27	16 1.68	64.38	10 22.20	0.797

NOTE.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Tues.	1	10 42 12.66	9.070	N. 8 13 18.1	54.53	0 10.34	0.786	10 42 23.00
Wed.	2	10 45 50.19	9.057	7 51 25.4	54.85	0 29.37	0.798	10 46 19.56
Thur.	3	10 49 27.44	9.046	7 29 25.2	55.16	0 48.67	0.810	10 50 16.11
Fri.	4	10 53 4.43	9.036	7 7 17.7	55.46	1 8.23	0.820	10 54 12.66
Sat.	5	10 56 41.18	9.027	6 45 3.1	55.75	1 28.04	0.829	10 58 9.22
Sun.	6	11 0 17.72	9.018	6 22 41.9	56.02	1 48.05	0.838	11 2 5.77
Mon.	7	11 3 54.07	9.011	6 0 14.3	56.28	2 8.26	0.846	11 6 2.33
Tues.	8	11 0 30.24	9.004	5 37 40.5	56.53	2 28.64	0.852	11 9 58.88
Wed.	9	11 11 6.26	8.998	5 15 0.9	56.76	2 49.18	0.858	11 13 55.44
Thur.	10	11 14 42.14	8.992	4 52 15.9	56.98	3 9.85	0.863	11 17 51.99
Fri.	11	11 18 17.91	8.988	4 29 25.8	57.19	3 30.63	0.868	11 21 48.54
Sat.	12	11 21 53.59	8.985	4 6 30.8	57.39	3 51.50	0.871	11 25 45.09
Sun.	13	11 25 29.19	8.982	3 43 31.3	57.57	4 12.45	0.874	11 29 41.64
Mon.	14	11 29 4.74	8.980	3 20 27.6	57.73	4 33.45	0.876	11 33 38.19
Tues.	15	11 32 40.25	8.979	2 57 20.1	57.88	4 54.50	0.878	11 37 34.75
Wed.	16	11 36 15.74	8.979	2 34 9.2	58.02	5 15.57	0.878	11 41 31.31
Thur.	17	11 39 51.23	8.979	2 10 55.2	58.14	5 36.63	0.878	11 45 27.86
Fri.	18	11 43 26.74	8.980	1 47 38.3	58.25	5 57.68	0.877	11 49 24.42
Sat.	19	11 47 2.25	8.981	1 24 18.9	58.34	6 18.72	0.876	11 53 20.97
Sun.	20	11 50 37.81	8.982	1 0 57.8	58.41	6 39.71	0.873	11 57 17.52
Mon.	21	11 54 13.44	8.986	0 37 35.2	58.47	7 0.63	0.870	12 1 14.07
Tues.	22	11 57 49.16	8.990	N. 0 14 11.3	58.52	7 21.47	0.866	12 5 10.63
Wed.	23	12 1 24.97	8.994	S. 0 9 13.7	58.55	7 42.21	0.862	12 9 7.18
Thur.	24	12 5 0.90	8.999	0 32 39.2	58.56	8 2.83	0.857	12 13 3.73
Fri.	25	12 8 36.96	9.005	0 56 4.8	58.56	8 23.32	0.851	12 17 0.28
Sat.	26	12 12 13.18	9.012	1 19 30.3	58.55	8 43.66	0.844	12 20 56.84
Sun.	27	12 15 49.57	9.019	1 42 55.3	58.52	9 3.82	0.837	12 24 53.39
Mon.	28	12 19 26.15	9.027	2 6 19.4	58.48	9 23.80	0.828	12 28 49.95
Tues.	29	12 23 2.95	9.037	2 29 42.2	58.42	9 43.55	0.819	12 32 46.50
Wed.	30	12 26 39.99	9.048	2 53 3.6	58.35	10 3.07	0.809	12 36 43.06
Thur.	31	12 30 17.29	9.059	S. 3 16 23.1	58.27	10 22.33	0.797	12 40 39.62

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	244	158 57 14.3	56 39.3	145.28	—0.53	0.0036889	44.8	13 15 26.33
2	245	159 55 21.7	54 46.6	145.34	0.43	.0035811	45.0	13 11 30.43
3	246	160 53 30.7	52 55.5	145.41	0.30	.0034728	45.2	13 7 34.52
4	247	161 51 41.4	51 6.0	145.48	0.17	.0033642	45.4	13 3 38.61
5	248	162 49 54.0	49 18.5	145.56	—0.02	.0032551	45.6	12 59 42.70
6	249	163 48 8.5	47 32.9	145.64	+0.11	.0031455	45.7	12 55 46.79
7	250	164 46 24.9	45 49.2	145.72	0.24	.0030355	45.9	12 51 50.89
8	251	165 44 43.3	44 7.5	145.80	0.36	.0029251	46.1	12 47 54.99
9	252	166 43 3.8	42 27.9	145.89	0.44	.0028139	46.4	12 43 59.08
10	253	167 41 26.3	40 50.3	145.98	0.49	.0027021	46.7	12 40 3.17
11	254	168 39 50.9	39 14.8	146.07	0.52	.0025896	47.0	12 36 7.26
12	255	169 38 17.8	37 41.6	146.16	0.53	.0024763	47.4	12 32 11.35
13	256	170 36 46.8	36 10.5	146.25	0.51	.0023622	47.7	12 28 15.44
14	257	171 35 18.0	34 41.5	146.34	0.44	.0022470	48.2	12 24 19.53
15	258	172 33 51.3	33 14.7	146.43	0.36	.0021308	48.6	12 20 23.62
16	259	173 32 26.7	31 50.0	146.52	0.25	.0020133	49.2	12 16 27.71
17	260	174 31 4.3	30 27.5	146.61	0.14	.0018946	49.7	12 12 31.81
18	261	175 29 43.8	29 6.9	146.69	+0.01	.0017747	50.2	12 8 35.90
19	262	176 28 25.3	27 48.3	146.77	—0.12	.0016538	50.7	12 4 39.99
20	263	177 27 8.7	26 31.6	146.85	0.25	.0015316	51.2	12 0 44.08
21	264	178 25 54.0	25 16.8	146.93	0.35	.0014083	51.5	11 56 48.17
22	265	179 24 41.1	24 3.8	147.00	0.45	.0012841	51.9	11 52 52.27
23	266	180 23 30.0	22 52.6	147.07	0.51	.0011591	52.2	11 48 56.36
24	267	181 22 20.6	21 43.1	147.14	0.54	.0010334	52.5	11 45 0.45
25	268	182 21 13.0	20 35.4	147.22	0.56	.0009070	52.7	11 41 4.54
26	269	183 20 7.1	19 29.4	147.29	0.54	.0007802	52.8	11 37 8.64
27	270	184 19 2.9	18 25.1	147.36	0.49	.0006531	53.0	11 33 12.73
28	271	185 18 0.5	17 22.6	147.43	0.41	.0005259	53.0	11 29 16.82
29	272	186 16 59.8	16 21.7	147.51	0.30	.0003988	53.0	11 25 20.91
30	273	187 16 1.0	15 22.8	147.58	0.18	.0002719	52.8	11 21 25.00
31	274	188 15 3.9	14 25.6	147.66	—0.06	0.0001453	52.7	11 17 29.09

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	15 32.3	15 38.5	56 55.0	+1.91	57 17.9	+1.90	10 11.6	2.16	12.8
2	15 44.7	15 50.7	57 40.6	1.86	58 2.6	1.79	11 2.0	2.07	13.8
3	15 56.4	16 1.7	58 23.5	1.68	58 42.9	1.54	11 50.9	2.02	14.8
4	16 6.5	16 10.6	59 0.4	1.36	59 15.6	1.16	12 38.9	2.00	15.8
5	16 14.0	16 16.7	59 28.2	0.94	59 38.1	0.71	13 26.9	2.03	16.8
6	16 18.6	16 19.8	59 45.3	0.47	59 49.6	+0.24	14 16.3	2.11	17.8
7	16 20.3	16 20.0	59 51.1	+0.02	59 50.0	−0.19	15 8.3	2.24	18.8
8	16 19.0	16 17.5	59 46.5	−0.39	59 40.9	0.54	16 3.8	2.39	19.8
9	16 15.5	16 13.0	59 33.5	0.69	59 24.4	0.81	17 2.9	2.52	20.8
10	16 10.2	16 7.1	59 14.0	0.91	59 2.6	0.99	18 4.6	2.58	21.8
11	16 3.7	16 0.1	58 50.4	1.05	58 37.5	1.09	19 6.5	2.53	22.8
12	15 56.5	15 52.8	58 24.0	1.13	58 10.1	1.16	20 6.2	2.40	23.8
13	15 48.9	15 45.0	57 56.0	1.19	57 41.6	1.21	21 1.8	2.22	24.8
14	15 41.0	15 37.0	57 27.0	1.22	57 12.2	1.24	21 52.9	2.04	25.8
15	15 32.9	15 28.8	56 57.3	1.25	56 42.3	1.25	22 39.9	1.89	26.8
16	15 24.7	15 20.7	56 27.3	1.25	56 12.3	1.24	23 23.6	1.78	27.8
17	15 16.7	15 12.7	55 57.5	1.22	55 43.0	1.19	δ		28.8
18	15 8.8	15 5.1	55 28.9	1.16	55 15.3	1.11	0 5.3	1.72	0.3
19	15 1.6	14 58.3	55 2.3	1.04	54 50.2	0.96	0 46.2	1.69	1.3
20	14 55.3	14 52.7	54 39.2	0.86	54 29.5	0.75	1 27.2	1.33	2.3
21	14 50.5	14 48.7	54 21.3	0.62	54 14.7	0.47	2 9.4	1.79	3.3
22	14 47.4	14 46.6	54 9.9	−0.31	54 7.2	−0.16	2 53.5	1.87	4.3
23	14 46.4	14 46.9	54 6.6	+0.04	54 8.3	+0.23	3 40.1	2.00	5.3
24	14 48.1	14 49.9	54 12.4	0.45	54 19.0	0.66	4 29.4	2.10	6.3
25	14 52.3	14 55.5	54 28.2	0.87	54 39.9	1.08	5 20.9	2.17	7.3
26	14 59.5	15 4.1	54 54.2	1.29	55 10.9	1.49	6 13.8	2.21	8.3
27	15 9.2	15 14.9	55 30.0	1.66	55 51.2	1.82	7 6.9	2.19	9.3
28	15 21.2	15 28.0	56 14.3	1.95	56 39.0	2.07	7 59.1	2.14	10.3
29	15 35.1	15 42.4	57 5.0	2.17	57 31.8	2.25	8 49.7	2.08	11.3
30	15 49.7	15 57.0	57 59.0	2.25	58 25.8	2.20	9 38.9	2.03	12.3
31	16 4.1	16 10.8	58 51.8	+2.15	59 16.3	+1.96	10 27.1	2.01	13.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	20 32 32.33	2.2686	S.23 9 6.4	9.840
1	20 34 48.36	2.2657	22 59 11.6	9.973
2	20 37 4.21	2.2627	22 49 9.1	10.106
3	20 39 19.88	2.2597	22 38 58.8	10.236
4	20 41 35.37	2.2567	22 28 40.6	10.367
5	20 43 50.68	2.2537	22 18 14.7	10.497
6	20 46 5.81	2.2507	22 7 41.0	10.626
7	20 48 20.76	2.2477	21 56 59.6	10.755
8	20 50 35.53	2.2448	21 46 10.5	10.882
9	20 52 50.13	2.2418	21 35 13.8	11.007
10	20 55 4.55	2.2388	21 24 9.6	11.133
11	20 57 18.79	2.2357	21 12 57.8	11.258
12	20 59 32.84	2.2326	21 1 38.5	11.382
13	21 1 46.70	2.2294	20 50 12 0	11.504
14	21 4 0.37	2.2263	20 38 38.3	11.626
15	21 6 13.86	2.2233	20 26 57.2	11.744
16	21 8 27.17	2.2203	20 15 9.0	11.862
17	21 10 40.30	2.2173	20 3 13.7	11.983
18	21 12 53.25	2.2143	19 51 11.2	12.101
19	21 15 6.02	2.2112	19 39 1.7	12.216
20	21 17 18.60	2.2081	19 26 45.3	12.330
21	21 19 30.99	2.2050	19 14 22.1	12.446
22	21 21 43.20	2.2020	19 1 52.0	12.557
23	21 23 55.22	2.1990	S.18 49 15.2	12.666

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 26 7.05	2.1959	S.18 36 31.9	12.778
1	21 28 18.71	2.1928	18 23 41.9	12.889
2	21 30 30.19	2.1898	18 10 45.3	12.998
3	21 32 41.49	2.1870	17 57 42.2	13.104
4	21 34 52.62	2.1842	17 44 32.8	13.210
5	21 37 3.58	2.1812	17 31 17.1	13.313
6	21 39 14.35	2.1782	17 17 54.9	13.416
7	21 41 24.95	2.1752	17 4 26.6	13.519
8	21 43 35.37	2.1723	16 50 52.3	13.622
9	21 45 45.62	2.1696	16 37 11.8	13.722
10	21 47 55.71	2.1669	16 23 25.3	13.822
11	21 50 5.64	2.1642	16 9 33.0	13.918
12	21 52 15.42	2.1615	15 55 35.0	14.013
13	21 54 25.04	2.1588	15 41 31.1	14.108
14	21 56 34.49	2.1559	15 27 21.5	14.204
15	21 58 43.76	2.1530	15 13 6.5	14.297
16	22 0 52.86	2.1504	14 58 46.0	14.385
17	22 3 1.81	2.1479	14 44 20.0	14.477
18	22 5 10.62	2.1455	14 29 48.5	14.570
19	22 7 19.27	2.1432	14 15 11.7	14.657
20	22 9 27.79	2.1408	14 0 29.8	14.742
21	22 11 36.16	2.1385	13 45 42.8	14.825
22	22 13 44.40	2.1362	13 30 50.8	14.908
23	22 15 52.50	2.1338	13 15 53.7	14.990
24	22 18 0.45	2.1315	S.13 0 51.8	15.071

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 18 0.45	2.1315	S.13 0 51.8	15.071
1	22 20 8.27	2.1293	12 45 45.2	15.150
2	22 22 15.96	2.1272	12 30 33.7	15.230
3	22 24 23.52	2.1252	12 15 17.5	15.309
4	22 26 30.96	2.1232	11 59 56.8	15.385
5	22 28 38.28	2.1212	11 44 31.5	15.459
6	22 30 45.49	2.1192	11 29 1.8	15.532
7	22 32 52.57	2.1172	11 13 27.8	15.599
8	22 34 59.54	2.1153	10 57 49.7	15.673
9	22 37 6.41	2.1136	10 42 7.3	15.740
10	22 39 13.17	2.1120	10 26 20 9	15.808
11	22 41 19.83	2.1104	10 10 30.5	15.872
12	22 43 26.40	2.1088	9 54 36 2	15.939
13	22 45 32.88	2.1072	9 38 38.1	16.005
14	22 47 39.25	2.1056	9 22 36.3	16.061
15	22 49 45.54	2.1042	9 6 31.0	16.119
16	22 51 51.74	2.1030	8 50 22.2	16.178
17	22 53 57.88	2.1018	8 34 9.8	16.236
18	22 56 3.95	2.1006	8 17 54.0	16.292
19	22 58 9.95	2.0994	8 1 35.0	16.346
20	23 0 15.87	2.0983	7 45 12.7	16.398
21	23 2 21.72	2.0972	7 28 47.3	16.448
22	23 4 27.52	2.0962	7 12 18.9	16.499
23	23 6 33.27	2.0952	S. 6 55 47.5	16.548

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 8 38.96	2.0943	S. 6 39 13.2	16.597
1	23 10 44.59	2.0935	6 22 36.2	16.641
2	23 12 50.19	2.0930	6 5 56 5	16.683
3	23 14 55.76	2.0925	5 49 14.3	16.723
4	23 17 1 30	2.0921	5 32 29.7	16.764
5	23 19 6.81	2.0918	5 15 42.7	16.803
6	23 21 12.31	2.0915	4 58 53.4	16.841
7	23 23 17.79	2.0912	4 42 2.0	16.877
8	23 25 23.25	2.0909	4 25 8.5	16.911
9	23 27 28.69	2.0907	4 8 12.9	16.943
10	23 29 34.11	2.0907	3 51 15.4	16.974
11	23 31 39.52	2.0907	3 34 16.1	17.003
12	23 33 44.94	2.0908	3 17 15.1	17.030
13	23 35 50.38	2.0909	3 0 12.5	17.056
14	23 37 55.84	2.0910	2 43 8.3	17.083
15	23 40 1.30	2.0912	2 26 2.6	17.108
16	23 42 6.77	2.0916	2 8 55.5	17.129
17	23 44 12.28	2.0920	1 51 47.2	17.149
18	23 46 17.82	2.0925	1 34 37.9	17.165
19	23 48 23.39	2.0932	1 17 27.6	17.183
20	23 50 28.99	2.0939	1 0 16.2	17.197
21	23 52 34.64	2.0947	0 43 4.0	17.211
22	23 54 40.35	2.0958	0 25 51 0	17.225
23	23 56 46.12	2.0968	S. 0 8 37.2	17.236
24	23 58 51.97	2.0979	N. 0 8 37.2	17.244

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 58 51.97	2.0979	N. 0 8 37.2	17.244
1	0 0 57.89	2.0990	0 25 52.0	17.250
2	0 3 3.87	2.1000	0 43 7.2	17.254
3	0 5 9.91	2.1012	1 0 22.5	17.257
4	0 7 16.01	2.1023	1 17 38.0	17.258
5	0 9 22.19	2.1037	1 34 53.5	17.258
6	0 11 28.45	2.1050	1 52 9.0	17.258
7	0 13 34.79	2.1063	2 9 24.4	17.256
8	0 15 41.21	2.1080	2 26 39.7	17.253
9	0 17 47.74	2.1100	2 43 54.5	17.244
10	0 19 54.39	2.1122	3 1 8.9	17.236
11	0 22 1.17	2.1142	3 18 22.8	17.227
12	0 24 8.06	2.1164	3 35 36.1	17.215
13	0 26 15.10	2.1185	3 52 48.6	17.202
14	0 28 22.28	2.1206	4 10 0.3	17.187
15	0 30 29.57	2.1229	4 27 11.0	17.169
16	0 32 37.00	2.1253	4 44 20.6	17.152
17	0 34 44.60	2.1280	5 1 29.2	17.133
18	0 36 52.34	2.1307	5 18 36.5	17.112
19	0 39 0.26	2.1333	5 35 42.4	17.087
20	0 41 8.34	2.1359	5 52 46.8	17.062
21	0 43 16.58	2.1387	6 9 49.6	17.035
22	0 45 24.98	2.1417	6 26 50.8	17.005
23	0 47 33.57	2.1447	N. 6 43 50.2	16.974

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 49 42.34	2.1477	N. 7 0 47.7	16.942
1	0 51 51.28	2.1507	7 17 43.2	16.907
2	0 54 0.40	2.1537	7 34 36.5	16.872
3	0 56 9.68	2.1567	7 51 27.9	16.838
4	0 58 19.15	2.1597	8 8 17.1	16.800
5	1 0 28.81	2.1629	8 25 3.9	16.758
6	1 2 38.66	2.1663	8 41 48.1	16.714
7	1 4 48.74	2.1700	8 58 29.8	16.670
8	1 6 59.05	2.1736	9 15 8.7	16.625
9	1 9 9.57	2.1773	9 31 44.7	16.573
10	1 11 20.33	2.1813	9 48 17.6	16.523
11	1 13 31.33	2.1853	10 4 47.4	16.470
12	1 15 42.55	2.1893	10 21 14.0	16.417
13	1 17 54.02	2.1932	10 37 37.4	16.361
14	1 20 5.72	2.1971	10 53 57.4	16.306
15	1 22 17.66	2.2012	11 10 14.1	16.247
16	1 24 29.85	2.2055	11 26 27.3	16.189
17	1 26 42.30	2.2098	11 42 36.8	16.127
18	1 28 55.01	2.2142	11 58 42.5	16.061
19	1 31 7.98	2.2185	12 14 44.2	15.997
20	1 33 21.22	2.2228	12 30 42.0	15.927
21	1 35 34.72	2.2271	12 46 35.5	15.856
22	1 37 48.48	2.2316	13 2 24.8	15.784
23	1 40 2.53	2.2365	13 18 9.7	15.712
24	1 42 16.87	2.2414	N.13 33 50.4	15.638

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 42 16.87	2.2414	N.13 33 50.4	15.638
1	1 44 31.49	2.2463	13 49 26.4	15.563
2	1 46 46.40	2.2512	14 4 57.9	15.485
3	1 49 1.60	2.2561	14 20 24.6	15.402
4	1 51 17.10	2.2612	14 35 46.3	15.322
5	1 53 32.93	2.2664	14 51 3.1	15.236
6	1 55 49.07	2.2714	15 6 14.8	15.150
7	1 58 5.51	2.2764	15 21 21.2	15.064
8	2 0 22.25	2.2816	15 36 22.4	14.975
9	2 2 39.30	2.2867	15 51 18.2	14.882
10	2 4 56.66	2.2920	16 6 8.4	14.789
11	2 7 14.34	2.2973	16 20 53.0	14.695
12	2 9 32.33	2.3026	16 35 31.8	14.596
13	2 11 50.64	2.3080	16 50 4.6	14.498
14	2 14 9.29	2.3137	17 4 31.5	14.398
15	2 16 28.28	2.3193	17 18 52.4	14.296
16	2 18 47.61	2.3250	17 33 7.2	14.195
17	2 21 7.28	2.3307	17 47 15.8	14.090
18	2 23 27.29	2.3363	18 1 18.0	13.982
19	2 25 47.63	2.3419	18 15 13.7	13.872
20	2 28 8.32	2.3475	18 29 2.7	13.761
21	2 30 29.33	2.3531	18 42 45.0	13.648
22	2 32 50.68	2.3589	18 56 20.5	13.534
23	2 35 12.38	2.3648	N.19 9 49.1	13.418

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 37 34.43	2.3706	N.19 23 10.8	13.300
1	2 39 56.84	2.3765	19 36 25.2	13.182
2	2 42 19.60	2.3822	19 49 32.4	13.062
3	2 44 42.70	2.3878	20 2 32.2	12.938
4	2 47 6.14	2.3936	20 15 24.6	12.812
5	2 49 29.94	2.3994	20 28 9.5	12.685
6	2 51 54.09	2.4052	20 40 46.8	12.558
7	2 54 18.59	2.4111	20 53 16.4	12.428
8	2 56 43.44	2.4171	21 5 38.1	12.296
9	2 59 8.64	2.4229	21 17 51.9	12.162
10	3 1 34.19	2.4288	21 29 57.5	12.027
11	3 4 0.10	2.4346	21 41 55.0	11.890
12	3 6 26.37	2.4404	21 53 44.1	11.754
13	3 8 52.97	2.4462	22 5 25.1	11.613
14	3 11 19.92	2.4521	22 16 57.6	11.470
15	3 13 47.21	2.4579	22 28 21.4	11.327
16	3 16 14.86	2.4638	22 39 36.7	11.182
17	3 18 42.86	2.4695	22 50 43.3	11.035
18	3 21 11.19	2.4752	23 1 41.0	10.887
19	3 23 39.86	2.4808	23 12 29.8	10.738
20	3 26 8.87	2.4865	23 23 9.6	10.588
21	3 28 38.22	2.4922	23 33 40.4	10.435
22	3 31 7.91	2.4978	23 44 1.9	10.281
23	3 33 37.93	2.5033	23 54 14.1	10.125
24	3 36 8.29	2.5087	N.24 4 16.9	9.967

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	3 36 8.29	2.5087	N.24 4 16.9	9.967
1	3 38 38.97	2.5141	24 14 10.2	9.808
2	3 41 9.97	2.5192	24 23 53.9	9.648
3	3 43 41.27	2.5244	24 33 28.0	9.488
4	3 46 12.89	2.5296	24 42 52.5	9.328
5	3 48 44.82	2.5347	24 52 7.4	9.167
6	3 51 17.05	2.5397	25 1 12.5	9.003
7	3 53 49.59	2.5447	25 10 7.7	8.835
8	3 56 22.42	2.5497	25 18 52.7	8.663
9	3 58 55.55	2.5517	25 27 27.4	8.491
10	4 1 28.97	2.5595	25 35 51.9	8.321
11	4 4 2.67	2.5641	25 44 6.0	8.150
12	4 6 36.65	2.5686	25 52 9.8	7.977
13	4 9 10.90	2.5732	26 0 3.2	7.803
14	4 11 45.43	2.5776	26 7 46.3	7.629
15	4 14 20.21	2.5818	26 15 18 8	7.455
16	4 16 55.24	2.5858	26 22 40.8	7.276
17	4 19 30 52	2.5898	26 29 52.0	7.096
18	4 22 6.03	2.5938	26 36 52.5	6.916
19	4 24 41.77	2.5978	26 43 42.4	6.736
20	4 27 17.75	2.6017	26 50 21.3	6.555
21	4 29 53.95	2.6054	26 56 49.3	6.373
22	4 32 30.37	2.6090	27 3 6.2	6.190
23	4 35 7.00	2.6124	N.27 9 12.2	6.006

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	4 37 43.84	2.6157	N.27 15 7.0	5.821
1	4 40 20.87	2.6188	27 20 50.7	5.636
2	4 42 58.08	2.6216	27 26 23.3	5.452
3	4 45 35.44	2.6242	27 31 44.8	5.263
4	4 48 12.96	2.6269	27 36 55.0	5.076
5	4 50 50.65	2.6295	27 41 53.9	4.888
6	4 53 28.48	2.6320	27 46 41.5	4.698
7	4 56 6.46	2.6343	27 51 17.7	4.508
8	4 58 44.58	2.6365	27 55 42.5	4.318
9	5 1 22.84	2.6388	27 59 55.8	4.126
10	5 4 1.22	2.6408	28 3 57.6	3.934
11	5 6 39.72	2.6427	28 7 48.0	3.742
12	5 9 18.31	2.6441	28 11 26.8	3.551
13	5 11 56.98	2.6453	28 14 54.1	3.358
14	5 14 35.72	2.6464	28 18 9.8	3.165
15	5 17 14.52	2.6474	28 21 14.0	2.972
16	5 19 53.37	2.6482	28 24 6.5	2.778
17	5 22 32.27	2.6489	28 26 47.4	2.585
18	5 25 11.21	2.6495	28 29 16.7	2.390
19	5 27 50.20	2.6498	28 31 34.3	2.195
20	5 30 29.20	2.6500	28 33 40.2	2.000
21	5 33 8.21	2.6500	28 35 34.5	1.807
22	5 35 47.22	2.6500	28 37 17.1	1.615
23	5 38 26.21	2.6498	28 38 48.2	1.422
24	5 41 5.19	2.6494	N.28 40 7.7	1.229

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 41 5.19	2.6494	N.28 40 7.7	1.229
1	5 43 44.12	2.6488	28 41 15.6	1.036
2	5 46 23.02	2.6482	28 42 11.8	0.841
3	5 49 1.88	2.6474	28 42 56.4	0.644
4	5 51 40.69	2.6465	28 43 29.2	0.451
5	5 54 19.43	2.6452	28 43 50.4	0.256
6	5 56 58.09	2.6438	28 43 59.9	0.062
7	5 59 36.67	2.6422	28 43 57.9	0.129
8	6 2 15.14	2.6402	28 43 44.4	0.321
9	6 4 53.49	2.6382	28 43 19.4	0.511
10	6 7 31.72	2.6362	28 42 43.0	0.704
11	6 10 9.82	2.6340	28 41 55.0	0.896
12	6 12 47.77	2.6317	28 40 55.5	1.087
13	6 15 25.59	2.6291	28 39 44.6	1.276
14	6 18 3.24	2.6263	28 38 22.4	1.464
15	6 20 40.73	2.6235	28 36 48.9	1.652
16	6 23 18.04	2.6206	28 35 4.1	1.841
17	6 25 55.18	2.6175	28 33 8.0	2.028
18	6 28 32.13	2.6143	28 31 0.7	2.215
19	6 31 8.88	2.6107	28 28 42.2	2.401
20	6 33 45.41	2.6071	28 26 12.6	2.586
21	6 36 21.72	2.6034	28 23 31.9	2.769
22	6 38 57.80	2.5994	28 20 40.2	2.955
23	6 41 33.63	2.5952	N.28 17 37.4	3.136

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	6 44 9.21	2.5908	N.28 14 23.6	3.321
1	6 46 44.53	2.5865	28 10 58.9	3.500
2	6 49 19.59	2.5822	28 7 23.5	3.681
3	6 51 54.39	2.5779	28 3 37.3	3.858
4	6 54 28.92	2.5732	27 59 40.5	4.035
5	6 57 3.16	2.5682	27 55 33.1	4.212
6	6 59 37.09	2.5631	27 51 15.1	4.388
7	7 2 10.72	2.5581	27 46 46.7	4.562
8	7 4 44.05	2.5530	27 42 7.8	4.736
9	7 7 17.07	2.5478	27 37 18.5	4.908
10	7 9 49.77	2.5423	27 32 18.9	5.079
11	7 12 22.14	2.5367	27 27 9.0	5.250
12	7 14 54.17	2.5310	27 21 48.9	5.419
13	7 17 25.85	2.5251	27 16 18.7	5.585
14	7 19 57.20	2.5196	27 10 38.7	5.751
15	7 22 28.20	2.5138	27 4 48.7	5.915
16	7 24 58.85	2.5079	26 58 48.9	6.078
17	7 27 29.13	2.5019	26 52 39.3	6.241
18	7 29 59.05	2.4958	26 46 20.0	6.402
19	7 32 28.61	2.4895	26 39 51.1	6.561
20	7 34 57.79	2.4830	26 33 12.7	6.719
21	7 37 26.58	2.4764	26 26 24.9	6.878
22	7 39 54.96	2.4697	26 19 27.5	7.031
23	7 42 22.94	2.4630	26 12 21.0	7.184
24	7 44 50.53	2.4563	N.26 5 5.4	7.337

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.					TUESDAY 15.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	7 44 50.53	2.4568	N.26 5 5.4	7.337	0	9 34 38.07	2.1200	N.17 46 51.0	12.823
1	7 47 17.72	2.4497	25 57 40.6	7.487	1	9 36 45.09	2.1136	17 33 59.2	12.900
2	7 49 44.51	2.4431	25 50 6.9	7.635	2	9 38 51.72	2.1072	17 21 2.9	12.975
3	7 52 10.92	2.4364	25 42 24.4	7.781	3	9 40 57.97	2.1008	17 8 2.2	13.047
4	7 54 36.91	2.4296	25 34 33.2	7.927	4	9 43 3.83	2.0945	16 54 57.2	13.119
5	7 57 2.49	2.4227	25 26 33.2	8.072	5	9 45 9.32	2.0883	16 41 47.9	13.189
6	7 59 27.65	2.4157	25 18 24.5	8.217	6	9 47 14.44	2.0822	16 28 34.4	13.257
7	8 1 52.39	2.4087	25 10 7.1	8.361	7	9 49 19.19	2.0762	16 15 16.9	13.324
8	8 4 16.70	2.4017	25 1 41.2	8.501	8	9 51 23.58	2.0702	16 1 55.3	13.391
9	8 6 40.59	2.3947	24 53 7.0	8.639	9	9 53 27.61	2.0642	15 48 29.8	13.457
10	8 9 4.06	2.3876	24 44 24.6	8.776	10	9 55 31.29	2.0582	15 35 0.4	13.523
11	8 11 27.12	2.3805	24 35 34.0	8.911	11	9 57 34.60	2.0523	15 21 27.1	13.586
12	8 13 49.76	2.3735	24 26 35.3	9.046	12	9 59 37.57	2.0464	15 7 50.1	13.647
13	8 16 11.97	2.3665	24 17 28.6	9.179	13	10 1 40.18	2.0407	14 54 9.5	13.705
14	8 18 33.75	2.3594	24 8 13.9	9.310	14	10 3 42.45	2.0351	14 40 25.5	13.762
15	8 20 55.09	2.3523	23 58 51.4	9.440	15	10 5 44.39	2.0296	14 26 38.1	13.817
16	8 23 16.01	2.3450	23 49 21.1	9.568	16	10 7 46.01	2.0241	14 12 47.4	13.872
17	8 25 36.49	2.3376	23 39 43.3	9.693	17	10 9 47.29	2.0186	13 58 53.4	13.927
18	8 27 56.52	2.3302	23 29 58.1	9.818	18	10 11 48.24	2.0132	13 44 56.2	13.979
19	8 30 16.12	2.3229	23 20 5.3	9.942	19	10 13 48.87	2.0078	13 30 55.9	14.030
20	8 32 35.28	2.3157	23 10 5.2	10.064	20	10 15 49.18	2.0025	13 16 52.6	14.079
21	8 34 54.02	2.3086	22 59 57.8	10.182	21	10 17 49.18	1.9973	13 2 46.3	14.127
22	8 37 12.32	2.3012	22 49 43.3	10.300	22	10 19 48.86	1.9921	12 48 37.2	14.175
23	8 39 30.18	2.2939	N.22 39 21.8	10.415	23	10 21 48.24	1.9870	N.12 34 25.2	14.222
	MONDAY 14.					WEDNESDAY 16.			
0	8 41 47.60	2.2865	N.22 28 53.5	10.527	0	10 23 47.31	1.9820	N.12 20 10.5	14.266
1	8 44 4.57	2.2791	22 18 18.4	10.639	1	10 25 46.08	1.9772	12 5 53.3	14.309
2	8 46 21.09	2.2719	22 7 36.6	10.750	2	10 27 44.57	1.9725	11 51 33.5	14.351
3	8 48 37.19	2.2647	21 56 48.1	10.859	3	10 29 42.78	1.9678	11 37 11.2	14.392
4	8 50 52.85	2.2575	21 45 53.0	10.967	4	10 31 40.71	1.9632	11 22 46.4	14.433
5	8 53 8.08	2.2504	21 34 51.4	11.075	5	10 33 38.36	1.9585	11 8 19.2	14.473
6	8 55 22.89	2.2433	21 23 43.4	11.181	6	10 35 35.73	1.9538	10 53 49.7	14.510
7	8 57 37.27	2.2361	21 12 29.1	11.286	7	10 37 32.83	1.9492	10 39 18.0	14.546
8	8 59 51.22	2.2290	21 1 8.4	11.391	8	10 39 29.66	1.9448	10 24 44.2	14.580
9	9 2 4.75	2.2220	20 49 41.8	11.495	9	10 41 26.23	1.9404	10 10 8.4	14.612
10	9 4 17.86	2.2150	20 38 9.0	11.597	10	10 43 22.54	1.9361	9 55 30.8	14.642
11	9 6 30.55	2.2080	20 26 30.1	11.696	11	10 45 18.59	1.9319	9 40 51.4	14.672
12	9 8 42.81	2.2010	20 14 45.4	11.792	12	10 47 14.39	1.9277	9 26 10.2	14.702
13	9 10 54.66	2.1940	20 2 55.1	11.885	13	10 49 9.93	1.9236	9 11 27.2	14.731
14	9 13 6.10	2.1871	19 50 59.3	11.976	14	10 51 5.23	1.9197	8 56 42.5	14.759
15	9 15 17.13	2.1802	19 38 58.0	12.068	15	10 53 0.30	1.9158	8 41 56.1	14.786
16	9 17 27.75	2.1734	19 26 51.2	12.159	16	10 54 55.14	1.9120	8 27 8.2	14.811
17	9 19 37.96	2.1666	19 14 38.9	12.249	17	10 56 49.75	1.9083	8 12 18.8	14.836
18	9 21 47.75	2.1597	19 2 21.3	12.337	18	10 58 44.15	1.9046	7 57 27.9	14.858
19	9 23 57.13	2.1530	18 49 58.5	12.422	19	11 0 38.31	1.9010	7 42 35.8	14.880
20	9 26 6.11	2.1463	18 37 30.7	12.505	20	11 2 32.27	1.8976	7 27 42.4	14.901
21	9 28 14.69	2.1396	18 24 57.9	12.587	21	11 4 26.02	1.8943	7 12 47.7	14.920
22	9 30 22.87	2.1330	18 12 20.3	12.666	22	11 6 19.58	1.8910	6 57 51.9	14.938
23	9 32 30.66	2.1265	17 59 38.0	12.745	23	11 8 12.94	1.8877	6 42 55.1	14.955
24	9 34 38.07	2.1200	N.17 46 51.0	12.823	24	11 10 6.09	1.8845	N. 6 27 57.3	14.971

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	11 10 6.09	1.8845	N. 6 27 57.3	14.971
1	11 11 59.07	1.8813	6 12 58.6	14.986
2	11 13 51.85	1.8781	5 57 59.0	15.000
3	11 15 44.44	1.8750	5 42 58.6	15.012
4	11 17 36.86	1.8720	5 27 57.5	15.023
5	11 19 29.10	1.8691	5 12 55.8	15.033
6	11 21 21.16	1.8663	4 57 53.5	15.043
7	11 23 13.07	1.8636	4 42 50.6	15.052
8	11 25 4.81	1.8611	4 27 47.2	15.060
9	11 26 56.41	1.8586	4 12 43.4	15.064
10	11 28 47.85	1.8561	3 57 39.4	15.069
11	11 30 39.14	1.8537	3 42 35.1	15.073
12	11 32 30.30	1.8514	3 27 30.5	15.077
13	11 34 21.30	1.8492	3 12 25.7	15.079
14	11 36 12.18	1.8470	2 57 20.9	15.081
15	11 38 2.93	1.8450	2 42 16.0	15.083
16	11 39 53.56	1.8430	2 27 11.0	15.083
17	11 41 44.08	1.8410	2 12 6.0	15.081
18	11 43 34.48	1.8390	1 57 1.3	15.078
19	11 45 24.77	1.8371	1 41 56.7	15.075
20	11 47 14.94	1.8353	1 26 52.3	15.071
21	11 49 5.02	1.8336	1 11 48.2	15.065
22	11 50 54.99	1.8319	0 56 44.5	15.060
23	11 52 44.87	1.8304	N. 0 41 41.1	15.052

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	11 54 34.65	1.8290	N. 0 26 38.2	15.044
1	11 56 24.35	1.8276	N. 0 11 35.8	15.034
2	11 58 13.97	1.8264	S. 0 3 25.9	15.022
3	12 0 3.52	1.8252	0 18 27.0	15.010
4	12 1 53.00	1.8240	0 33 27.2	14.997
5	12 3 42.41	1.8230	0 48 26.6	14.983
6	12 5 31.76	1.8220	1 3 25.2	14.969
7	12 7 21.05	1.8210	1 18 22.9	14.954
8	12 9 10.28	1.8200	1 33 19.7	14.939
9	12 10 59.46	1.8193	1 48 15.6	14.923
10	12 12 48.60	1.8186	2 3 10.5	14.906
11	12 14 37.70	1.8180	2 18 4.4	14.888
12	12 16 26.75	1.8174	2 32 57.1	14.868
13	12 18 15.77	1.8168	2 47 48.6	14.848
14	12 20 4.76	1.8162	3 2 38.9	14.826
15	12 21 53.72	1.8158	3 17 27.8	14.803
16	12 23 42.66	1.8154	3 32 15.3	14.780
17	12 25 31.58	1.8152	3 47 1.4	14.756
18	12 27 20.50	1.8150	4 1 46.1	14.731
19	12 29 9.40	1.8150	4 16 29.3	14.706
20	12 30 58.31	1.8150	4 31 11.0	14.681
21	12 32 47.22	1.8150	4 45 51.1	14.654
22	12 34 36.12	1.8150	5 0 29.5	14.626
23	12 36 25.02	1.8150	5 15 6.2	14.597
24	12 38 13.93	1.8153	S. 5 29 41.1	14.567

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 38 13.93	1.8153	S. 5 29 41.1	14.567
1	12 40 2.86	1.8157	5 44 14.2	14.536
2	12 41 51.81	1.8161	5 58 45.4	14.504
3	12 43 40.78	1.8165	6 13 14.7	14.472
4	12 45 29.78	1.8169	6 27 42.0	14.438
5	12 47 18.81	1.8175	6 42 7.3	14.404
6	12 49 7.88	1.8182	6 56 30.5	14.369
7	12 50 57.00	1.8189	7 10 51.6	14.333
8	12 52 46.15	1.8196	7 25 10.5	14.296
9	12 54 35.36	1.8204	7 39 27.1	14.259
10	12 56 24.61	1.8212	7 53 41.4	14.221
11	12 58 13.92	1.8222	8 7 53.4	14.181
12	13 0 3.29	1.8232	8 22 3.0	14.140
13	13 1 52.72	1.8242	8 36 10.2	14.099
14	13 3 42.22	1.8253	8 50 14.9	14.057
15	13 5 31.78	1.8265	9 4 17.1	14.015
16	13 7 21.41	1.8277	9 18 16.8	13.972
17	13 9 11.12	1.8290	9 32 13.8	13.927
18	13 11 0.91	1.8304	9 46 8.1	13.882
19	13 12 50.78	1.8318	9 59 59.7	13.837
20	13 14 40.74	1.8335	10 13 48.6	13.792
21	13 16 30.80	1.8352	10 27 34.7	13.745
22	13 18 20.96	1.8369	10 41 18.0	13.697
23	13 20 11.22	1.8386	S. 10 54 58.3	13.647

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 22 1.58	1.8408	S. 11 8 35.6	13.597
1	13 23 52.04	1.8421	11 22 9.9	13.547
2	13 25 42.61	1.8439	11 35 41.2	13.496
3	13 27 33.30	1.8458	11 49 9.4	13.443
4	13 29 24.10	1.8478	12 2 34.4	13.391
5	13 31 15.02	1.8499	12 15 56.3	13.339
6	13 33 6.06	1.8521	12 29 15.0	13.286
7	13 34 57.23	1.8543	12 42 30.4	13.228
8	13 36 48.53	1.8565	12 55 42.4	13.171
9	13 38 39.96	1.8587	13 8 50.9	13.113
10	13 40 31.53	1.8609	13 21 56.0	13.056
11	13 42 23.24	1.8631	13 34 57.6	12.997
12	13 44 15.09	1.8656	13 47 55.6	12.937
13	13 46 7.09	1.8680	14 0 50.1	12.877
14	13 47 59.24	1.8705	14 13 40.9	12.817
15	13 49 51.54	1.8732	14 26 28.1	12.756
16	13 51 44.00	1.8758	14 39 11.6	12.693
17	13 53 36.62	1.8785	14 51 51.3	12.630
18	13 55 29.41	1.8811	15 4 27.2	12.566
19	13 57 22.36	1.8839	15 16 59.2	12.501
20	13 59 15.47	1.8867	15 29 27.3	12.436
21	14 1 8.76	1.8896	15 41 51.5	12.370
22	14 3 2.22	1.8927	15 54 11.7	12.303
23	14 4 55.87	1.8957	16 6 27.8	12.234
24	14 6 49.69	1.8987	S. 16 18 39.8	12.165

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 21.					WEDNESDAY 23.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	14 6 49.69	1.8987	S.16 18 39.8	12.165	0	15 42 9.18	2.0834	S.24 28 4.4	7.921
1	14 8 43.69	1.9017	16 30 47.6	12.096	1	15 44 14.31	2.0877	24 35 56.4	7.812
2	14 10 37.87	1.9048	16 42 51.2	12.025	2	15 46 19.70	2.0919	24 43 41.8	7.702
3	14 12 32.24	1.9080	16 54 50.6	11.953	3	15 48 25.34	2.0961	24 51 20.7	7.593
4	14 14 26.81	1.9113	17 6 45.6	11.882	4	15 50 31.24	2.1004	24 58 53.0	7.484
5	14 16 21.58	1.9146	17 18 36.4	11.809	5	15 52 37.39	2.1047	25 6 18.8	7.375
6	14 18 16.56	1.9178	17 30 22.7	11.734	6	15 54 43.79	2.1090	25 13 38.0	7.264
7	14 20 11.73	1.9210	17 42 4.5	11.660	7	15 56 50.45	2.1132	25 20 50.5	7.152
8	14 22 7.10	1.9243	17 53 41.9	11.585	8	15 58 57.37	2.1174	25 27 56.2	7.037
9	14 24 2.67	1.9277	18 5 14.7	11.508	9	16 1 4.53	2.1216	25 34 55.0	6.922
10	14 25 58.43	1.9311	18 16 42.9	11.432	10	16 3 11.94	2.1258	25 41 46.8	6.806
11	14 27 54.40	1.9345	18 28 6.5	11.354	11	16 5 19.60	2.1299	25 48 31.7	6.690
12	14 29 50.59	1.9381	18 39 25.4	11.276	12	16 7 27.51	2.1341	25 55 9.5	6.574
13	14 31 46.99	1.9418	18 50 39.6	11.197	13	16 9 35.68	2.1382	26 1 40.5	6.458
14	14 33 43.61	1.9455	19 1 49.1	11.117	14	16 11 44.09	2.1422	26 8 4.4	6.340
15	14 35 40.45	1.9492	19 12 53.7	11.035	15	16 13 52.74	2.1462	26 14 21.2	6.222
16	14 37 37.51	1.9529	19 23 53.3	10.953	16	16 16 1.63	2.1502	26 20 31.0	6.103
17	14 39 34.79	1.9565	19 34 48.0	10.871	17	16 18 10.76	2.1543	26 26 33.6	5.983
18	14 41 32.29	1.9602	19 45 37.8	10.788	18	16 20 20.14	2.1583	26 32 29.0	5.863
19	14 43 30.01	1.9639	19 56 22.6	10.705	19	16 22 29.77	2.1624	26 38 17.2	5.743
20	14 45 27.95	1.9675	20 7 2.4	10.620	20	16 24 39.63	2.1665	26 43 58.2	5.622
21	14 47 26.12	1.9715	20 17 37.0	10.533	21	16 26 49.74	2.1704	26 49 31.8	5.497
22	14 49 24.53	1.9754	20 28 6.4	10.447	22	16 29 0.09	2.1743	26 54 57.8	5.371
23	14 51 23.17	1.9793	S.20 38 30.7	10.361	23	16 31 10.67	2.1781	S.27 0 16.3	5.246
	TUESDAY 22.					THURSDAY 24.			
0	14 53 22.05	1.9832	S.20 48 49.8	10.274	0	16 33 21.49	2.1820	S.27 5 27.3	5.121
1	14 55 21.16	1.9871	20 59 3.6	10.185	1	16 35 32.53	2.1859	27 10 30.8	4.997
2	14 57 20.51	1.9912	21 9 12.1	10.095	2	16 37 43.79	2.1895	27 15 26.9	4.872
3	14 59 20.11	1.9954	21 19 15.1	10.003	3	16 39 55.27	2.1932	27 20 15.4	4.745
4	15 1 19.96	1.9996	21 29 12.5	9.911	4	16 42 6.97	2.1968	27 24 56.3	4.618
5	15 3 20.05	2.0038	21 39 4.4	9.818	5	16 44 18.89	2.2005	27 29 29.5	4.489
6	15 5 20.39	2.0078	21 48 50.7	9.726	6	16 46 31.03	2.2042	27 33 55.0	4.362
7	15 7 20.98	2.0118	21 58 31.5	9.633	7	16 48 43.39	2.2078	27 38 12.8	4.232
8	15 9 21.81	2.0158	22 8 6.7	9.540	8	16 50 55.96	2.2112	27 42 22.8	4.101
9	15 11 22.88	2.0198	22 17 36.3	9.445	9	16 53 8.72	2.2145	27 46 24.9	3.969
10	15 13 24.19	2.0239	22 27 0.1	9.348	10	16 55 21.68	2.2178	27 50 19.1	3.836
11	15 15 25.75	2.0281	22 36 18.1	9.252	11	16 57 34.85	2.2212	27 54 5.3	3.704
12	15 17 27.57	2.0323	22 45 30.3	9.155	12	16 59 48.21	2.2244	27 57 43.6	3.572
13	15 19 29.64	2.0365	22 54 36.7	9.056	13	17 2 1.77	2.2276	28 1 14.0	3.440
14	15 21 31.96	2.0408	23 3 37.2	8.956	14	17 4 15.52	2.2308	28 4 36.5	3.306
15	15 23 34.54	2.0451	23 12 31.7	8.857	15	17 6 29.46	2.2339	28 7 51.0	3.172
16	15 25 37.37	2.0493	23 21 20.0	8.754	16	17 8 43.58	2.2369	28 10 57.4	3.038
17	15 27 40.45	2.0534	23 30 2.2	8.652	17	17 10 57.88	2.2399	28 13 55.6	2.902
18	15 29 43.79	2.0576	23 38 38.3	8.551	18	17 13 12.37	2.2428	28 16 45.7	2.768
19	15 31 47.37	2.0619	23 47 8.3	8.448	19	17 15 27.02	2.2456	28 19 27.7	2.632
20	15 33 51.21	2.0662	23 55 32.1	8.345	20	17 17 41.84	2.2484	28 22 1.5	2.496
21	15 35 55.31	2.0705	24 3 49.7	8.241	21	17 19 56.83	2.2512	28 24 27.1	2.358
22	15 37 59.67	2.0748	24 12 1.0	8.135	22	17 22 11.99	2.2540	28 26 44.3	2.218
23	15 40 4.29	2.0791	24 20 5.9	8.028	23	17 24 27.31	2.2567	28 28 53.2	2.078
24	15 42 9.18	2.0834	S.24 28 4.4	7.921	24	17 26 42.79	2.2593	S.28 30 53.7	1.938

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 26 42.79	2.2593	S.28 30 53.7	1.938
1	17 28 58.42	2.2617	28 32 45.8	1.798
2	17 31 14.19	2.2640	28 34 29.5	1.658
3	17 33 30.10	2.2663	28 36 4.8	1.518
4	17 35 46.15	2.2686	28 37 31.7	1.378
5	17 38 2.34	2.2709	28 38 50.2	1.238
6	17 40 18.65	2.2732	28 40 0.3	1.098
7	17 42 35.10	2.2753	28 41 1.8	0.956
8	17 44 51.67	2.2771	28 41 54.8	0.812
9	17 47 8.35	2.2789	28 42 39.3	0.671
10	17 49 25.14	2.2807	28 43 15.3	0.528
11	17 51 42.04	2.2825	28 43 42.7	0.385
12	17 53 59.05	2.2843	28 44 1.6	0.240
13	17 56 16.15	2.2860	28 44 11.7	0.097
14	17 58 33.36	2.2876	28 44 13.2	0.048
15	18 0 50.66	2.2890	28 44 6.0	0.192
16	18 3 8.04	2.2903	28 43 50.1	0.338
17	18 5 25.50	2.2916	28 43 25.5	0.482
18	18 7 43.03	2.2928	28 42 52.1	0.626
19	18 10 0.64	2.2940	28 42 10.1	0.772
20	18 12 18.31	2.2950	28 41 19.4	0.918
21	18 14 36.04	2.2959	28 40 19.9	1.065
22	18 16 53.82	2.2968	28 39 11.6	1.212
23	18 19 11.65	2.2976	S.28 37 54.5	1.358

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 21 29.53	2.2983	S.28 36 28.6	1.505
1	18 23 47.45	2.2990	28 34 53.9	1.652
2	18 26 5.41	2.2997	28 33 10.4	1.797
3	18 28 23.41	2.3004	28 31 18.2	1.946
4	18 30 41.45	2.3010	28 29 17.1	2.092
5	18 32 59.52	2.3014	28 27 7.2	2.239
6	18 35 17.61	2.3018	28 24 48.5	2.387
7	18 37 35.72	2.3021	28 22 20.9	2.533
8	18 39 53.85	2.3023	28 19 44.5	2.680
9	18 42 11.99	2.3024	28 16 59.3	2.825
10	18 44 30.13	8.3024	28 14 5.4	2.972
11	18 46 48.26	2.3023	28 11 2.7	3.119
12	18 49 6.38	2.3020	28 7 51.1	3.268
13	18 51 24.48	2.3016	28 4 30.6	3.416
14	18 53 42.56	2.3011	28 1 1.2	3.565
15	18 56 0.61	2.3006	27 57 22.9	3.710
16	18 58 18.63	2.3001	27 53 35.9	3.857
17	19 0 36.62	2.2996	27 49 40.1	4.003
18	19 2 54.57	2.2991	27 45 35.5	4.152
19	19 5 12.50	2.2985	27 41 22.0	4.300
20	19 7 30.39	2.2977	27 36 59.7	4.448
21	19 9 48.21	2.2968	27 32 28.7	4.593
22	19 12 5.98	2.2958	27 27 48.9	4.737
23	19 14 23.70	2.2948	27 23 0.3	4.882
24	19 16 41.34	2.2938	S.27 18 3.0	5.028

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	19 16 41.34	2.2938	S.27 18 3.0	5.028
1	19 18 58.94	2.2927	27 12 57.0	6.172
2	19 21 16.47	2.2916	27 7 42.3	5.317
3	19 23 33.93	2.2904	27 2 18.9	5.462
4	19 25 51.32	2.2892	26 56 46.8	5.608
5	19 28 8.63	2.2878	26 51 6.0	5.752
6	19 30 25.84	2.2863	26 45 16.5	5.897
7	19 32 42.97	2.2848	26 39 18.2	6.040
8	19 35 0.01	2.2832	26 33 11.7	6.183
9	19 37 16.95	2.2817	26 26 56.1	6.327
10	19 39 33.79	2.2802	26 20 32.5	6.469
11	19 41 50.56	2.2787	26 14 0.1	6.612
12	19 44 7.25	2.2771	26 7 19.1	6.755
13	19 46 23.83	2.2753	26 0 29.5	6.898
14	19 48 40.29	2.2733	25 53 31.3	7.041
15	19 50 56.63	2.2713	25 46 24.6	7.182
16	19 53 12.85	2.2693	25 39 9.5	7.320
17	19 55 28.95	2.2673	25 31 46.2	7.458
18	19 57 44.91	2.2653	25 24 14.5	7.596
19	20 0 0.77	2.2633	25 16 34.5	7.736
20	20 2 16.51	2.2613	25 8 46.1	7.876
21	20 4 32.12	2.2593	25 0 49.4	8.016
22	20 6 47.62	2.2572	24 52 44.3	8.154
23	20 9 2.98	2.2551	S.24 44 30.9	8.292

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	20 11 18.21	2.2528	S.24 36 9.3	8.430
1	20 13 33.31	2.2504	24 27 39.5	8.563
2	20 15 48.26	2.2480	24 19 1.7	8.697
3	20 18 3.07	2.2457	24 10 15.9	8.831
4	20 20 17.74	2.2433	24 1 22.0	8.965
5	20 22 32.26	2.2410	23 52 20.1	9.098
6	20 24 46.65	2.2386	23 43 10.2	9.232
7	20 27 0.90	2.2361	23 33 52.3	9.365
8	20 29 14.99	2.2336	23 24 26.4	9.496
9	20 31 28.94	2.2311	23 14 52.6	9.626
10	20 33 42.73	2.2286	23 5 11.1	9.757
11	20 35 56.37	2.2261	22 55 21.8	9.886
12	20 38 9.87	2.2236	22 45 24.8	10.015
13	20 40 23.22	2.2211	22 35 20.0	10.144
14	20 42 36.41	2.2187	22 25 7.5	10.272
15	20 44 49.47	2.2162	22 14 47.3	10.400
16	20 47 2.38	2.2137	22 4 19.5	10.525
17	20 49 15.13	2.2112	21 53 44.3	10.649
18	20 51 27.73	2.2087	21 43 1.6	10.773
19	20 53 40.19	2.2062	21 32 11.4	10.898
20	20 55 52.49	2.2036	21 21 13.7	11.022
21	20 58 4.63	2.2010	21 10 8.7	11.144
22	21 0 16.61	2.1983	20 58 56.4	11.266
23	21 2 28.43	2.1957	20 47 36.8	11.387
24	21 4 40.11	2.1932	S.20 36 10.0	11.507

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 29.					WEDNESDAY 30.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	21 4 40.11	2.1932	S.20 36 10.0	11.507	0	21 56 37.38	2.1385	S.15 27 43.0	14.107
1	21 6 51.63	2.1908	20 24 36.0	11.627	1	21 58 45.63	2.1366	15 13 33.6	14.204
2	21 9 3.00	2.1883	20 12 54.8	11.744	2	22 0 53.77	2.1347	14 59 18.5	14.297
3	21 11 14.22	2.1858	20 1 6.7	11.860	3	22 3 1.80	2.1329	14 44 57.9	14.388
4	21 13 25.29	2.1835	19 49 11.6	11.976	4	22 5 9.72	2.1312	14 30 31.9	14.479
5	21 15 36.22	2.1812	19 37 9.6	12.091	5	22 7 17.54	2.1295	14 16 0.4	14.570
6	21 17 47.01	2.1788	19 25 0.7	12.206	6	22 9 25.27	2.1278	14 1 23.5	14.662
7	21 19 57.66	2.1763	19 12 44.9	12.319	7	22 11 32.89	2.1261	13 46 41.1	14.751
8	21 22 8.16	2.1738	19 0 22.3	12.432	8	22 13 40.41	2.1245	13 31 53.4	14.839
9	21 24 18.51	2.1713	18 47 53.0	12.545	9	22 15 47.83	2.1230	13 17 0.4	14.925
10	21 26 28.72	2.1690	18 35 16.9	12.657	10	22 17 55.16	2.1215	13 2 2.2	15.010
11	21 28 38.79	2.1666	18 22 34.2	12.767	11	22 20 2.40	2.1201	12 46 59.1	15.093
12	21 30 48.72	2.1643	18 9 44.9	12.876	12	22 22 9.56	2.1188	12 31 51.0	15.177
13	21 32 58.51	2.1619	17 56 49.2	12.982	13	22 24 16.66	2.1176	12 16 37.9	15.259
14	21 35 8.15	2.1595	17 43 47.1	13.088	14	22 26 23.69	2.1164	12 1 19.9	15.340
15	21 37 17.65	2.1572	17 30 38.6	13.195	15	22 28 30.64	2.1152	11 45 57.1	15.420
16	21 39 27.02	2.1551	17 17 23.7	13.302	16	22 30 37.52	2.1141	11 30 29.5	15.498
17	21 41 36.26	2.1529	17 4 2.4	13.407	17	22 32 44.34	2.1129	11 14 57.3	15.574
18	21 43 45.37	2.1507	16 50 34.8	13.510	18	22 34 51.09	2.1118	10 59 20.6	15.650
19	21 45 54.35	2.1485	16 37 1.2	13.612	19	22 36 57.77	2.1108	10 43 39.3	15.725
20	21 48 3.20	2.1465	16 23 21.5	13.712	20	22 39 4.39	2.1099	10 27 53.6	15.798
21	21 50 11.93	2.1445	16 9 35.8	13.812	21	22 41 10.96	2.1091	10 12 3.5	15.869
22	21 52 20.53	2.1425	15 55 44.1	13.911	22	22 43 17.48	2.1083	9 56 9.3	15.937
23	21 54 29.02	2.1405	15 41 46.5	14.009	23	22 45 23.96	2.1075	9 40 11.0	16.006
24	21 56 37.38	2.1385	S.15 27 43.0	14.107	24	22 47 30.41	2.1068	S. 9 24 8.6	16.073

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, ...	3	17	7.2
☾ Last Quarter, ...	10	10	50.7
● New Moon, ...	17	17	33.6
☽ First Quarter	25	20	58.9

	Day.	h.
☾ Perigee, ...	7	1
☾ Apogee, ...	22	21

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	56 44 48	2615	58 23 23	2600	60 2 18	2585	61 41 34	2569
	a Pegasi	E.	51 42 31	3076	50 13 52	3082	48 45 21	3092	47 17 2	3105
	a Arietis	E.	91 40 44	2644	90 2 49	2629	88 24 34	2614	86 45 58	2599
	Jupiter	E.	101 8 19	2638	99 30 15	2622	97 51 50	2606	96 13 3	2591
2	Antares	W.	70 3 9	2494	71 44 31	2479	73 26 14	2465	75 8 16	2451
	a Pegasi	E.	40 0 48	3229	38 35 13	3271	37 10 28	3322	35 46 42	3383
	a Arietis	E.	78 27 49	2525	76 47 10	2511	75 6 12	2497	73 24 54	2483
	Jupiter	E.	87 53 52	2515	86 12 59	2499	84 31 45	2485	82 50 11	2472
	Aldebaran	E.	109 19 36	2574	107 40 6	2558	106 0 13	2543	104 19 59	2528
3	Antares	W.	83 43 24	2384	85 27 21	2372	87 11 36	2359	88 56 10	2347
	a Arietis	E.	64 53 47	2420	63 10 41	2409	61 27 19	2398	59 43 41	2387
	Jupiter	E.	74 17 31	2405	72 34 3	2393	70 50 18	2381	69 6 16	2369
	Aldebaran	E.	95 53 41	2457	94 11 27	2444	92 28 55	2431	90 46 5	2419
4	Antares	W.	97 43 7	2294	99 29 15	2285	101 15 37	2275	103 2 13	2267
	a Aquilæ	W.	53 14 28	3679	54 31 37	3609	55 50 2	3545	57 9 36	3487
	a Arietis	E.	51 2 3	2344	49 17 7	2337	47 32 1	2331	45 46 46	2326
	Jupiter	E.	60 22 7	2319	58 36 35	2309	56 50 49	2302	55 4 52	2297
	Aldebaran	E.	82 7 56	2368	80 23 35	2359	78 39 1	2350	76 54 15	2344
5	*a* Aquilæ	W.	64 2 21	3255	65 27 25	3221	66 53 9	3188	68 19 32	3161
	Fomalhaut	W.	34 39 14	3034	36 8 45	2962	37 39 45	2898	39 12 6	2843
	Jupiter	E.	46 12 40	2266	44 25 50	2262	42 38 54	2260	40 51 55	2258
	Aldebaran	E.	68 8 5	2315	66 22 28	2312	64 36 46	2309	62 51 0	2309
	Pollux	E.	111 16 6	2233	109 28 27	2227	107 40 39	2221	105 52 43	2216
	Saturn	E.	114 56 57	2279	113 10 26	2272	111 23 46	2267	109 36 58	2260
	Venus	E.	122 32 27	2617	120 53 55	2610	119 15 13	2604	117 36 23	2597
6	*a* Aquilæ	W.	75 39 6	3052	77 8 14	3039	78 37 39	3026	80 7 20	3016
	Fomalhaut	W.	47 9 18	2649	48 47 7	2623	50 25 31	2598	52 4 29	2578
	Aldebaran	E.	54 1 54	2311	52 16 10	2315	50 30 32	2319	48 45 0	2325
	Pollux	E.	96 51 27	2198	95 2 57	2196	93 14 24	2194	91 25 48	2193
	Saturn	E.	100 41 9	2242	98 53 44	2239	97 6 15	2237	95 18 43	2236
	Venus	E.	109 20 14	2574	107 40 44	2572	106 1 10	2569	104 21 32	2567
	Mars	E.	122 10 19	2394	120 26 36	2392	118 42 51	2391	116 59 2	2389
7	*a* Aquilæ	W.	87 38 11	2993	89 8 34	2992	90 38 57	2993	92 9 18	2996
	Fomalhaut	W.	60 25 21	2505	62 6 27	2497	63 47 45	2489	65 29 13	2482
	a Pegasi	W.	39 52 47	2879	41 25 33	2832	42 59 19	2792	44 33 58	2756
	Aldebaran	E.	40 0 14	2378	38 16 8	2396	36 32 27	2415	34 49 13	2436
	Pollux	E.	82 22 34	2193	80 33 56	2194	78 45 20	2196	76 56 47	2198
	Saturn	E.	86 20 48	2236	84 33 14	2237	82 45 42	2239	80 58 12	2241
	Venus	E.	96 3 2	2566	94 23 20	2567	92 43 40	2567	91 4 2	2571
	Mars	E.	108 19 39	2388	106 35 47	2389	104 51 57	2391	103 8 9	2393
	Sun	E.	136 5 26	2492	134 24 2	2494	132 42 41	2497	131 1 23	2498
8	*a* Aquilæ	W.	99 39 4	3043	101 8 24	3057	102 37 26	3073	104 6 8	3092
	Fomalhaut	W.	73 58 22	2467	75 40 22	2467	77 22 22	2467	79 4 21	2469
	a Pegasi	W.	52 37 3	2638	54 15 6	2624	55 53 29	2610	57 32 11	2596
	Pollux	E.	67 54 55	2213	66 6 47	2217	64 18 45	2221	62 30 49	2226
	Saturn	E.	72 1 41	2257	70 14 38	2261	68 27 41	2266	66 40 51	2270
	Venus	E.	82 46 44	2586	81 7 30	2591	79 28 22	2596	77 49 20	2600
	Mars	E.	94 30 1	2408	92 46 37	2411	91 3 18	2416	89 20 6	2421

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	63 21 11	2554	65 1 9	2539	66 41 28	2524	68 22 8	2509
	a Pegasi	E.	45 48 59	3121	44 21 15	3141	42 53 55	3165	41 27 4	3194
	a Arietis	E.	85 7 2	2583	83 27 44	2569	81 48 6	2554	80 8 8	2539
	Jupiter	E.	94 33 55	2575	92 54 26	2560	91 14 36	2544	89 34 24	2530
2	Antares	W.	76 50 38	2437	78 33 20	2422	80 16 22	2409	81 59 44	2396
	a Pegasi	E.	34 24 6	3454	33 2 51	3539	31 43 10	3641	30 25 20	3755
	a Arietis	E.	71 43 17	2470	70 1 21	2458	68 19 8	2444	66 36 36	2432
	Jupiter	E.	81 8 18	2457	79 26 4	2443	77 43 31	2431	76 0 40	2418
	Aldebaran	E.	102 39 25	2512	100 58 29	2497	99 17 12	2484	97 35 36	2470
3	Antares	W.	90 41 1	2336	92 26 8	2324	94 11 32	2313	95 57 12	2303
	a Arietis	E.	57 59 48	2378	56 15 41	2368	54 31 21	2359	52 46 48	2351
	Jupiter	E.	67 21 57	2358	65 37 22	2347	63 52 31	2337	62 7 25	2328
	Aldebaran	E.	89 2 58	2406	87 19 35	2397	85 35 56	2387	83 52 3	2378
4	Antares	W.	104 49 1	2258	106 36 2	2251	108 23 14	2243	110 10 37	2237
	a Aquilæ	W.	58 30 15	3431	59 51 56	3382	61 14 33	3336	62 38 3	3294
	a Arietis	E.	44 1 25	2322	42 15 57	2318	40 30 24	2316	38 44 48	2314
	Jupiter	E.	53 18 45	2287	51 32 27	2281	49 45 59	2275	47 59 23	2270
	Aldebaran	E.	75 9 19	2337	73 24 13	2331	71 38 58	2325	69 53 35	2320
5	*a* Aquilæ	W.	69 46 28	3133	71 13 58	3110	72 41 56	3088	74 10 20	3070
	Fomalhaut	W.	40 45 38	2794	42 20 14	2751	43 55 46	2712	45 32 10	2679
	Jupiter	E.	39 4 54	2256	37 17 50	2257	35 30 47	2258	33 43 45	2259
	Aldebaran	E.	61 5 13	2307	59 19 22	2306	57 33 31	2307	55 47 41	2309
	Pollux	E.	104 4 40	2212	102 16 30	2208	100 28 14	2204	98 39 53	2201
	Saturn	E.	107 50 2	2256	106 2 58	2251	104 15 47	2247	102 28 30	2245
	Venus	E.	115 57 24	2591	114 18 16	2585	112 39 1	2581	110 59 40	2577
6	*a* Aquilæ	W.	81 37 13	3007	83 7 17	3000	84 37 30	2995	86 7 49	2993
	Fomalhaut	W.	53 43 54	2559	55 23 46	2543	57 3 59	2530	58 44 31	2517
	Aldebaran	E.	46 59 37	2332	45 14 24	2342	43 29 25	2351	41 44 40	2364
	Pollux	E.	89 37 10	2192	87 48 31	2192	85 59 52	2192	84 11 13	2192
	Saturn	E.	93 31 9	2235	91 43 34	2235	89 55 59	2235	88 8 23	2235
	Venus	E.	102 41 52	2566	101 2 10	2565	99 22 28	2565	97 42 44	2566
	Mars	E.	115 15 12	2388	113 31 20	2387	111 47 26	2387	110 3 32	2387
7	*a* Aquilæ	W.	93 39 33	3003	95 9 42	3010	96 39 42	3020	98 9 30	3031
	Fomalhaut	W.	67 10 51	2477	68 52 37	2473	70 34 28	2470	72 16 24	2468
	a Pegasi	W.	46 9 23	2725	47 45 29	2698	49 22 11	2675	50 59 24	2656
	Aldebaran	E.	33 6 33	2465	31 24 30	2497	29 43 13	2534	28 2 47	2582
	Pollux	E.	75 8 17	2200	73 19 49	2202	71 31 25	2206	69 43 7	2210
	Saturn	E.	79 10 45	2243	77 23 22	2244	75 36 3	2249	73 48 49	2253
	Venus	E.	89 24 27	2573	87 44 55	2576	86 5 27	2579	84 26 3	2583
	Mars	E.	101 24 24	2395	99 40 42	2398	97 57 3	2401	96 13 29	2405
	Sun	E.	129 20 7	2500	127 38 54	2503	125 57 45	2507	124 16 41	2510
8	*a* Aquilæ	W.	105 34 27	3112	107 2 22	3134	108 29 50	3158	109 56 49	3191
	Fomalhaut	W.	80 46 18	2471	82 28 12	2474	84 10 2	2478	85 51 46	2482
	a Pegasi	W.	59 11 7	2590	60 50 16	2583	62 29 35	2577	64 9 2	2572
	Pollux	E.	60 43 0	2231	58 55 19	2236	57 7 45	2241	55 20 19	2247
	Saturn	E.	64 54 8	2275	63 7 32	2281	61 21 5	2287	59 34 47	2294
	Venus	E.	76 10 25	2606	74 31 37	2611	72 52 57	2617	71 14 25	2623
	Mars	E.	87 37 1	2426	85 54 3	2431	84 11 12	2436	82 28 29	2442

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Sun E.	122 35 42	2513	120 54 48	2517	119 13 59	2522	117 33 17	2527
9	Fomalhaut W.	87 33 24	2487	89 14 56	2492	90 56 20	2499	92 37 35	2506
	α Pegasi E.	65 48 35	2568	67 28 14	2566	69 7 56	2565	70 47 39	2565
	α Arietis W.	22 15 7	2447	23 57 35	2426	25 40 32	2412	27 23 50	2401
	Pollux E.	53 33 1	2253	51 45 52	2259	49 58 52	2264	48 12 0	2271
	Saturn E.	57 48 39	2300	56 2 39	2307	54 16 49	2313	52 31 9	2321
	Venus E.	69 36 1	2629	67 57 46	2635	66 19 39	2642	64 41 41	2650
	Mars E.	80 45 54	2448	79 3 27	2453	77 21 8	2460	75 38 58	2467
	Sun E.	109 11 30	2555	107 31 33	2561	105 51 44	2567	104 12 4	2574
10	α Pegasi W.	79 6 0	2574	80 45 30	2580	82 24 53	2584	84 4 10	2590
	α Arietis W.	36 2 55	2392	37 46 55	2383	39 30 54	2384	41 14 51	2387
	Jupiter W.	26 33 16	2382	28 17 16	2380	30 1 19	2379	31 45 24	2379
	Pollux E.	39 20 11	2307	37 34 21	2313	35 48 41	2321	34 3 12	2329
	Saturn E.	43 45 38	2362	42 1 8	2371	40 16 52	2381	38 32 50	2391
	Venus E.	56 34 21	2687	54 57 23	2695	53 20 37	2704	51 44 2	2712
	Mars E.	67 10 32	2501	65 29 20	2508	63 48 18	2516	62 7 27	2524
	Sun E.	95 56 5	2610	94 17 23	2617	92 38 51	2624	91 0 28	2633
11	α Pegasi W.	92 18 28	2627	93 56 49	2635	95 34 57	2643	97 12 53	2651
	α Arietis W.	49 53 25	2408	51 36 49	2412	53 20 6	2419	55 3 14	2424
	Jupiter W.	40 25 16	2394	42 9 0	2399	43 52 36	2408	45 36 6	2409
	Aldebaran W.	20 58 24	2965	22 29 33	2880	24 2 17	2823	25 36 15	2778
	Venus E.	43 44 0	2757	42 8 36	2766	40 33 24	2776	38 58 25	2786
	Mars E.	53 45 50	2563	52 6 4	2571	50 26 29	2579	48 47 5	2586
	Sun E.	82 51 15	2672	81 13 57	2680	79 36 50	2689	77 59 55	2696
12	α Arietis W.	63 36 50	2456	65 19 5	2463	67 1 10	2470	68 43 5	2477
	Jupiter W.	54 11 33	2440	55 54 11	2446	57 36 40	2453	59 19 0	2459
	Aldebaran W.	33 37 36	2656	35 15 15	2644	36 53 10	2636	38 31 16	2629
	Venus E.	31 6 55	2842	29 33 21	2854	28 0 3	2866	26 27 1	2880
	Mars E.	40 32 51	2629	38 54 35	2638	37 16 31	2646	35 38 38	2655
	Sun E.	69 58 1	2738	68 22 12	2747	66 46 34	2755	65 11 7	2763
13	α Arietis W.	77 10 11	2515	78 51 4	2522	80 31 47	2529	82 12 20	2536
	Jupiter W.	67 48 12	2495	69 29 32	2502	71 10 42	2510	72 51 41	2518
	Aldebaran W.	46 43 17	2619	48 21 46	2620	50 0 14	2622	51 38 39	2624
	Mars E.	27 32 14	2701	25 55 35	2710	24 19 8	2720	22 42 55	2731
	Sun E.	57 16 40	2807	55 42 21	2815	54 8 13	2824	52 34 16	2832
14	α Arietis W.	90 32 16	2577	92 11 42	2585	93 50 57	2594	95 30 0	2602
	Jupiter W.	81 13 57	2556	82 53 52	2565	84 33 35	2573	86 13 7	2581
	Aldebaran W.	59 49 40	2645	61 27 34	2650	63 5 21	2656	64 43 0	2662
	Pollux W.	15 49 56	2577	17 29 23	2580	19 8 46	2585	20 48 2	2591
	Sun E.	44 47 23	2876	43 14 34	2886	41 41 57	2894	40 9 31	2904
15	Jupiter W.	94 27 59	2622	96 6 24	2631	97 44 37	2640	99 22 38	2648
	Aldebaran W.	72 49 10	2696	74 25 57	2702	76 2 34	2714	77 39 0	2717
	Pollux W.	29 2 12	2625	30 40 33	2633	32 18 43	2640	33 56 43	2649
	Saturn W.	24 41 43	2727	26 17 47	2727	27 53 51	2728	29 29 54	2730
	Sun E.	32 30 16	2950	30 59 0	2959	29 27 56	2968	27 57 3	2977
20	Sun W.	25 45 52	3336	27 9 22	3344	28 32 43	3351	29 55 55	3358
	Antares E.	44 37 44	2971	43 6 55	2978	41 36 15	2985	40 5 44	2993

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight. ° ′ ″	P. L. of Diff.	XV$^{\text{h}}$. ° ′ ″	P. L. of Diff.	XVIII$^{\text{h}}$. ° ′ ″	P. L. of Diff.	XXI$^{\text{h}}$. ° ′ ″	P. L. of Diff.
8	Sun	E.	115 52 41	2532	114 12 12	2537	112 31 50	2543	110 51 36	2548
9	Fomalhaut	W.	94 18 40	2513	95 59 35	2522	97 40 18	2530	99 20 50	2538
	α Pegasi	W.	72 27 22	2564	74 7 6	2566	75 46 47	2568	77 26 26	2572
	α Arietis	W.	29 7 23	2394	30 51 7	2388	32 34 59	2384	34 18 56	2383
	Pollux	E.	46 25 18	2278	44 38 46	2285	42 52 24	2291	41 6 12	2299
	Saturn	E.	50 45 40	2328	49 0 22	2337	47 15 16	2344	45 30 21	2353
	Venus	E.	63 3 54	2657	61 26 16	2663	59 48 47	2672	58 11 29	2679
	Mars	E.	73 56 58	2473	72 15 7	2480	70 33 26	2487	68 51 54	2496
	Sun	E.	102 32 33	2580	100 53 11	2588	99 13 59	2595	97 34 57	2602
10	α Pegasi	W.	85 43 19	2596	87 22 20	2602	89 1 12	2609	90 39 55	2616
	α Arietis	W.	42 58 45	2390	44 42 34	2391	46 26 17	2398	48 9 55	2403
	Jupiter	W.	33 29 29	2380	35 13 32	2383	36 57 31	2386	38 41 26	2389
	Pollux	E.	32 17 55	2337	30 32 50	2345	28 47 56	2353	27 3 14	2362
	Saturn	E.	36 49 2	2401	35 5 29	2412	33 22 12	2426	31 39 13	2438
	Venus	E.	50 7 38	2721	48 31 26	2730	46 55 26	2738	45 19 37	2747
	Mars	E.	60 26 47	2531	58 46 17	2538	57 5 57	2546	55 25 48	2556
	Sun	E.	89 22 16	2640	87 44 15	2647	86 6 24	2655	84 28 44	2663
11	α Pegasi	W.	98 50 39	2661	100 28 11	2675	102 5 24	2687	103 42 22	2695
	α Arietis	W.	56 46 15	2430	58 29 7	2436	60 11 50	2442	61 54 25	2449
	Jupiter	W.	47 19 28	2415	49 2 42	2420	50 45 48	2426	52 28 45	2433
	Aldebaran	W.	27 11 12	2741	28 46 58	2712	30 23 22	2689	32 0 17	2671
	Venus	E.	37 23 39	2797	35 49 7	2807	34 14 48	2818	32 40 44	2830
	Mars	E.	47 7 51	2595	45 28 49	2603	43 49 58	2612	42 11 19	2620
	Sun	E.	76 23 10	2704	74 46 36	2713	73 10 13	2721	71 34 1	2730
12	α Arietis	W.	70 24 50	2484	72 6 26	2491	73 47 52	2499	75 29 7	2507
	Jupiter	W.	61 1 11	2466	62 43 12	2474	64 25 2	2481	66 6 42	2488
	Aldebaran	W.	40 9 32	2625	41 47 53	2622	43 26 18	2619	45 4 47	2618
	Venus	E.	24 54 16	2895	23 21 51	2912	21 49 48	2930	20 18 7	2947
	Mars	E.	34 0 57	2663	32 23 28	2672	30 46 11	2681	29 9 6	2691
	Sun	E.	63 35 51	2772	62 0 46	2781	60 25 53	2789	58 51 11	2798
13	α Arietis	W.	83 52 41	2545	85 32 51	2553	87 12 50	2561	88 52 39	2569
	Jupiter	W.	74 32 29	2525	76 13 7	2533	77 53 34	2540	79 33 51	2548
	Aldebaran	W.	53 17 1	2627	54 55 19	2631	56 33 32	2635	58 11 39	2640
	Mars	E.	21 6 56	2741	19 31 11	2753	17 55 41	2766	16 20 29	2780
	Sun	E.	51 0 30	2842	49 26 56	2851	47 53 34	2859	46 20 23	2868
14	α Arietis	W.	97 8 52	2611	98 47 32	2620	100 26 0	2630	102 4 14	2639
	Jupiter	W.	87 52 28	2589	89 31 38	2598	91 10 36	2606	92 49 23	2614
	Aldebaran	W.	66 20 31	2668	67 57 54	2674	69 35 9	2681	71 12 14	2688
	Pollux	W.	22 27 10	2597	24 6 9	2604	25 44 59	2610	27 23 40	2617
	Sun	E.	38 37 17	2913	37 5 15	2923	35 33 24	2931	34 1 44	2940
15	Jupiter	W.	101 0 28	2657	102 38 6	2666	104 15 31	2675	105 52 45	2684
	Aldebaran	W.	79 15 17	2725	80 51 23	2734	82 27 18	2741	84 3 3	2751
	Pollux	W.	35 34 32	2657	37 12 10	2666	38 49 36	2673	40 26 52	2681
	Saturn	W.	31 5 54	2734	32 41 49	2738	34 17 39	2743	35 53 22	2748
	Sun	E.	26 26 22	2987	24 55 53	2997	23 25 36	3006	21 55 31	3017
20	Sun	W.	31 18 59	3366	32 41 54	3374	34 4 40	3381	35 27 18	3388
	Antares	E.	38 35 22	3000	37 5 9	3007	35 35 5	3014	34 5 9	3020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
20	*a* Aquilæ	E.	96 56 22	3782	95 41 1	3786	94 25 44	3791	93 10 32	3794
21	Sun	W.	36 49 48	3394	38 12 11	3401	39 34 26	3408	40 56 34	3413
	Antares	E.	32 35 21	3026	31 5 41	3032	29 36 8	3037	28 6 41	3043
	a Aquilæ	E.	86 55 58	3829	85 41 26	3838	84 27 3	3848	83 12 50	3858
	Fomalhaut	E.	113 28 43	3308	112 4 41	3308	110 40 39	3308	109 16 37	3309
22	Sun	W.	47 45 46	3437	49 7 21	3440	50 28 52	3444	51 50 19	3446
	a Aquilæ	E.	77 4 37	3920	75 51 38	3935	74 38 54	3950	73 26 25	3965
	Fomalhaut	E.	102 16 38	3313	100 52 41	3313	99 28 45	3314	98 4 50	3314
23	Sun	W.	58 36 56	3454	59 58 11	3454	61 19 26	3454	62 40 41	3454
	a Aquilæ	E.	67 28 23	4064	66 17 46	4086	65 7 31	4111	63 57 40	4136
	Fomalhaut	E.	91 5 25	3318	89 41 34	3318	88 17 43	3319	86 53 53	3318
	a Pegasi	E.	112 52 0	3393	111 29 36	3387	110 7 5	3382	108 44 28	3376
24	Sun	W.	69 27 18	3444	70 48 45	3439	72 10 17	3436	73 31 53	3431
	a Aquilæ	E.	58 15 7	4296	57 8 10	4334	56 1 49	4376	54 56 6	4420
	Fomalhaut	E.	79 54 37	3315	78 30 44	3315	77 6 50	3313	75 42 56	3313
	a Pegasi	E.	101 49 38	3346	100 26 20	3341	99 2 56	3334	97 39 24	3328
25	Sun	W.	80 21 21	3401	81 43 36	3393	83 6 0	3386	84 28 33	3377
	Antares	W.	14 51 1	3032	16 20 34	3024	17 50 17	3017	19 20 9	3009
	Fomalhaut	E.	68 43 11	3309	67 19 10	3307	65 55 9	3307	64 31 6	3307
	a Pegasi	E.	90 39 56	3296	89 15 40	3288	87 51 15	3282	86 26 42	3276
26	Sun	W.	91 24 0	3325	92 47 42	3314	94 11 37	3302	95 35 46	3289
	Antares	W.	26 52 11	2962	28 23 12	2950	29 54 27	2939	31 25 56	2927
	Fomalhaut	E.	57 30 50	3309	56 6 49	3311	54 42 50	3313	53 18 54	3317
	a Pegasi	E.	79 21 53	3238	77 56 29	3231	76 30 56	3224	75 5 14	3215
27	Sun	W.	102 40 23	3220	104 6 9	3205	105 32 12	3189	106 58 34	3173
	Antares	W.	39 7 14	2863	40 40 20	2849	42 13 44	2835	43 47 27	2820
	Fomalhaut	E.	46 20 47	3356	44 57 40	3369	43 34 48	3385	42 12 14	3405
	a Pegasi	E.	67 54 31	3179	66 27 57	3173	65 1 15	3168	63 34 27	3161
	a Arietis	E.	109 11 20	2895	107 38 55	2881	106 6 12	2866	104 33 10	2851
	Jupiter	E.	117 50 31	2860	116 17 21	2846	114 43 53	2830	113 10 4	2815
28	Sun	W.	114 15 21	3088	115 43 45	3071	117 12 30	3053	118 41 37	3034
	Antares	W.	51 40 57	2741	53 16 42	2725	54 52 48	2708	56 29 17	2691
	a Pegasi	E.	56 18 58	3144	54 51 42	3144	53 24 26	3145	51 57 11	3148
	a Arietis	E.	96 42 57	2771	95 7 51	2754	93 32 23	2738	91 56 33	2721
	Jupiter	E.	105 15 58	2735	103 40 5	2718	102 3 49	2701	100 27 10	2684
29	Sun	W.	126 13 0	2940	127 44 28	2921	129 16 20	2902	130 48 36	2883
	Antares	W.	64 37 27	2604	66 16 17	2586	67 55 31	2568	69 35 10	2550
	a Pegasi	E.	44 42 35	3197	43 16 22	3216	41 50 32	3241	40 25 11	3270
	a Arietis	E.	83 51 40	2633	82 13 30	2616	80 34 57	2599	78 56 0	2580
	Jupiter	E.	92 18 7	2596	90 39 6	2578	88 59 41	2560	87 19 51	2541
30	Antares	W.	77 59 39	2460	79 41 48	2442	81 24 23	2425	83 7 22	2407
	a Pegasi	E.	33 29 48	3541	32 10 9	3632	30 52 9	3742	29 36 6	3873
	a Arietis	E.	70 35 9	2493	68 53 46	2476	67 11 59	2460	65 29 49	2443
	Jupiter	E.	78 54 26	2453	77 12 7	2435	75 29 22	2418	73 46 13	2400
	Aldebaran	E.	101 31 47	2535	99 51 23	2517	98 10 34	2499	96 29 19	2481

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
20	α Aquilæ	E.	91 55 24	3800	90 40 22	3807	89 25 27	3814	88 10 39	3820
21	Sun	W.	42 18 36	3418	43 40 32	3423	45 2 22	3429	46 24 6	3432
	Antares	E.	26 37 21	3047	25 8 7	3052	23 38 58	3057	22 9 56	3062
	α Aquilæ	E.	81 58 48	3869	80 44 57	3881	79 31 18	3893	78 17 51	3906
	Fomalhaut	E.	107 52 36	3309	106 28 35	3310	105 4 35	3311	103 40 36	3312
22	Sun	W.	53 11 43	3449	54 33 4	3451	55 54 23	3453	57 15 40	3454
	α Aquilæ	E.	72 14 12	3984	71 2 17	4003	69 50 40	4022	68 39 22	4041
	Fomalhaut	E.	96 40 55	3315	95 17 1	3317	93 53 9	3317	92 29 17	3317
23	Sun	W.	64 1 57	3453	65 23 14	3451	66 44 33	3449	68 5 54	3446
	α Aquilæ	E.	62 48 13	4164	61 39 13	4194	60 30 41	4226	59 22 39	4256
	Fomalhaut	E.	85 30 2	3318	84 6 11	3318	82 42 20	3317	81 18 30	3316
	α Pegasi	E.	107 21 43	3369	105 58 51	3364	104 35 53	3358	103 12 49	3352
24	Sun	W.	74 53 34	3427	76 15 20	3421	77 37 13	3415	78 59 13	3408
	α Aquilæ	E.	53 51 3	4469	52 46 44	4523	51 43 12	4579	50 40 29	4639
	Fomalhaut	E.	74 19 2	3313	72 55 6	3311	71 31 9	3310	70 7 10	3310
	α Pegasi	E.	96 15 45	3323	94 52 0	3316	93 28 7	3308	92 4 5	3302
25	Sun	W.	85 51 16	3367	87 14 10	3358	88 37 15	3348	90 0 31	3337
	Antares	W.	20 50 11	3001	22 20 23	2991	23 50 47	2981	25 21 23	2972
	Fomalhaut	E.	63 7 3	3306	61 43 0	3306	60 18 56	3308	58 54 52	3309
	α Pegasi	E.	85 2 2	3268	83 37 13	3260	82 12 15	3253	80 47 8	3245
26	Sun	W.	97 0 10	3276	98 24 49	3263	99 49 44	3249	101 14 55	3235
	Antares	W.	32 57 40	2916	34 29 39	2903	36 1 54	2890	37 34 26	2877
	Fomalhaut	E.	51 55 2	3322	50 31 16	3328	49 7 37	3335	47 44 6	3345
	α Pegasi	E.	73 39 23	3208	72 13 23	3200	70 47 14	3193	69 20 56	3187
27	Sun	W.	108 25 16	3157	109 52 17	3140	111 19 38	3124	112 47 19	3106
	Antares	W.	45 21 29	2806	46 55 51	2790	48 30 32	2774	50 5 34	2758
	Fomalhaut	E.	40 50 3	3427	39 28 19	3456	38 7 6	3489	36 46 30	3530
	α Pegasi	E.	62 7 31	3157	60 40 30	3152	59 13 23	3148	57 46 12	3146
	α Arietis	E.	102 59 48	2835	101 26 6	2820	99 52 4	2804	98 17 41	2788
	Jupiter	E.	111 35 55	2800	110 1 27	2785	108 26 39	2768	106 51 29	2752
28	Sun	W.	120 11 7	3016	121 41 0	2997	123 11 16	2978	124 41 56	2959
	Antares	W.	58 6 9	2674	59 43 24	2657	61 21 1	2640	62 59 2	2622
	α Pegasi	E.	50 29 59	3153	49 2 53	3159	47 35 55	3168	46 9 8	3180
	α Arietis	E.	90 20 21	2704	88 43 46	2686	87 6 47	2669	85 29 25	2652
	Jupiter	E.	98 50 8	2666	97 12 43	2649	95 34 55	2632	93 56 43	2614
29	Sun	W.	132 21 17	2863	133 54 23	2844	135 27 54	2825	137 1 50	2806
	Antares	W.	71 15 14	2532	72 55 43	2514	74 36 37	2496	76 17 56	2479
	α Pegasi	E.	39 0 24	3306	37 36 19	3351	36 13 6	3402	34 50 52	3464
	α Arietis	E.	77 16 38	2563	75 36 52	2545	73 56 42	2527	72 16 7	2511
	Jupiter	E.	85 39 35	2524	83 58 55	2507	82 17 51	2488	80 36 21	2470
30	Antares	W.	84 50 47	2389	86 34 37	2373	88 18 51	2358	90 3 30	2339
	α Pegasi	E.	28 22 19	4033	27 11 12	4228	26 3 12	4466	24 58 50	4760
	α Arietis	E.	63 47 16	2427	62 4 20	2410	60 21 0	2395	58 37 18	2380
	Jupiter	E.	72 2 38	2384	70 18 40	2367	68 34 18	2350	66 49 32	2334
	Aldebaran	E.	94 47 39	2463	93 5 34	2445	91 23 4	2428	89 40 9	2412

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Thur.	1	12 30 15.72	9.059	S. 3 16 13.0	58.27	16 1.68	64.38	10 22.20	0.797
Fri.	2	12 33 53.26	9.072	3 39 30.1	58.17	16 1.96	64.42	10 41.15	0.784
Sat.	3	12 37 31.12	9.085	4 2 44.6	58.06	16 2.23	64.47	10 59.79	0.771
Sun.	4	12 41 9.30	9.100	4 25 56.2	57.93	16 2.50	64.52	11 18.11	0.757
Mon.	5	12 44 47.85	9.115	4 49 4.7	57.79	16 2.78	64.57	11 36.07	0.741
Tues.	6	12 48 26.79	9.132	5 12 9.8	57.64	16 3.06	64.63	11 53.64	0.724
Wed.	7	12 52 6.14	9.149	5 35 11.1	57.47	16 3.34	64.69	12 10.80	0.707
Thur.	8	12 55 45.91	9.167	5 58 8.2	57.29	16 3.62	64.75	12 27.53	0.689
Fri.	9	12 59 26.12	9.186	6 21 0.7	57.09	16 3.90	64.82	12 43.83	0.670
Sat.	10	13 3 6.80	9.206	6 43 48.3	56.88	16 4.18	64.89	12 59.66	0.650
Sun.	11	13 6 47.98	9.227	7 6 30.6	56.65	16 4.45	64.96	13 15.00	0.629
Mon.	12	13 10 29.66	9.249	7 29 7.3	56.41	16 4.72	65.03	13 29.83	0.608
Tues.	13	13 14 11.88	9.271	7 51 37.9	56.15	16 4.99	65.11	13 44.13	0.585
Wed.	14	13 17 54.64	9.294	8 14 2.0	55.87	16 5.26	65.19	13 57.89	0.562
Thur.	15	13 21 37.96	9.318	8 36 19.4	55.58	16 5.53	65.27	14 11.09	0.538
Fri.	16	13 25 21.85	9.342	8 58 29.6	55.27	16 5.80	65.35	14 23.72	0.514
Sat.	17	13 29 6.33	9.367	9 20 32.2	54.94	16 6.06	65.44	14 35.76	0.489
Sun.	18	13 32 51.42	9.392	9 42 26.6	54.59	16 6.33	65.53	14 47.18	0.464
Mon.	19	13 36 37.13	9.418	10 4 12.4	54.23	16 6.60	65.62	14 58.00	0.438
Tues.	20	13 40 23.46	9.444	10 25 49.4	53.85	16 6.87	65.71	15 8.19	0.412
Wed.	21	13 44 10.43	9.471	10 47 17.2	53.45	16 7.14	65.81	15 17.75	0.385
Thur.	22	13 47 58.06	9.499	11 8 35.2	53.03	16 7.40	65.91	15 26.65	0.357
Fri.	23	13 51 46.36	9.527	11 29 43.1	52.60	16 7.67	66.01	15 34.88	0.329
Sat.	24	13 55 35.34	9.556	11 50 40.4	52.15	16 7.94	66.11	15 42.43	0.300
Sun.	25	13 59 25.01	9.585	12 11 26.7	51.69	16 8.21	66.21	15 49.28	0.271
Mon.	26	14 3 15.40	9.615	12 32 1.6	51.21	16 8.47	66.31	15 55.44	0.242
Tues.	27	14 7 6.51	9.645	12 52 24.8	50.71	16 8.73	66.42	16 0.88	0.212
Wed.	28	14 10 58.34	9.675	13 12 35.9	50.19	16 8.99	66.53	16 5.59	0.181
Thur.	29	14 14 50.91	9.706	13 32 34.4	49.66	16 9.25	66.64	16 9.57	0.150
Fri.	30	14 18 44.25	9.738	13 52 20.0	49.12	16 9.51	66.75	16 12.78	0.118
Sat.	31	14 22 38.36	9.771	14 11 52.3	48.56	16 9.77	66.86	16 15.22	0.085
Sun.	32	14 26 33.26	9.804	S.14 31 11.0	47.98	16 10.02	66.98	16 16.87	0.052

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Thur.	1	12 30 17.29	9.059	S. 3 16 23.1	58.27	10 22.33	0.797	12 40 39.62
Fri.	2	12 33 54.88	9.072	3 39 40.5	58.17	10 41.29	0.784	12 44 36.17
Sat.	3	12 37 32.79	9.085	4 2 55.3	58.06	10 59.93	0.771	12 48 32.72
Sun.	4	12 41 11.02	9.100	4 26 7.2	57.93	11 18.25	0.757	12 52 29.27
Mon.	5	12 44 49.63	9.115	4 49 16.0	57.79	11 36.20	0.741	12 56 25.83
Tues.	6	12 48 28.60	9.132	5 12 21.3	57.64	11 53.78	0.724	13 0 22.38
Wed.	7	12 52 8.00	9.149	5 35 22.8	57.47	12 10.94	0.707	13 4 18.94
Thur.	8	12 55 47.82	9.167	5 58 20.1	57.29	12 27.67	0.689	13 8 15.49
Fri.	9	12 59 28.07	9.186	6 21 12.8	57.09	12 43.98	0.670	13 12 12.05
Sat.	10	13 3 8.80	9.206	6 44 0.6	56.88	12 59.80	0.650	13 16 8.60
Sun.	11	13 6 50.02	9.227	7 6 43.1	56.65	13 15.14	0.629	13 20 5.16
Mon.	12	13 10 31.74	9.249	7 29 20.0	56.41	13 29.97	0.608	13 24 1.71
Tues.	13	13 14 14.00	9.271	7 51 50.8	56.15	13 44.27	0.585	13 27 58.27
Wed.	14	13 17 56.80	9.294	8 14 15.1	55.87	13 58.02	0.562	13 31 54.82
Thur.	15	13 21 40.16	9.318	8 36 32.6	55.58	14 11.21	0.538	13 35 51.37
Fri.	16	13 25 24.09	9.342	8 58 42.9	55.27	14 23.84	0.514	13 39 47.93
Sat.	17	13 29 8.61	9.367	9 20 45.6	54.94	14 35.87	0.489	13 43 44.48
Sun.	18	13 32 53.74	9.392	9 42 40.1	54.59	14 47.30	0.464	13 47 41.04
Mon.	19	13 36 39.48	9.418	10 4 26.0	54.23	14 58.11	0.438	13 51 37.59
Tues.	20	13 40 25.85	9.444	10 26 3.1	53.85	15 8.30	0.412	13 55 34.15
Wed.	21	13 44 12.85	9.471	10 47 30.9	53.45	15 17.85	0.385	13 59 30.70
Thur.	22	13 48 0.52	9.499	11 8 48.9	53.03	15 26.74	0.357	14 3 27.26
Fri.	23	13 51 48.85	9.527	11 29 56.7	52.60	15 34.96	0.329	14 7 23.81
Sat.	24	13 55 37.85	9.556	11 50 53.9	52.15	15 42.51	0.300	14 11 20.36
Sun.	25	13 59 27.55	9.585	12 11 40.2	51.69	15 49.36	0.271	14 15 16.91
Mon.	26	14 3 17.96	9.615	12 32 15.1	51.21	15 55.51	0.242	14 19 13.47
Tues.	27	14 7 9.09	9.645	12 52 38.3	50.71	16 0.93	0.212	14 23 10.02
Wed.	28	14 11 0.94	9.675	13 12 49.3	50.19	16 5.64	0.181	14 27 6.58
Thur.	29	14 14 53.53	9.706	13 32 47.7	49.66	16 9.61	0.150	14 31 3.14
Fri.	30	14 18 46.88	9.738	13 52 33.2	49.12	16 12.81	0.118	14 34 59.69
Sat.	31	14 22 41.01	9.771	14 12 5.4	48.56	16 15.24	0.085	14 38 56.25
Sun.	32	14 26 35.92	9.804	S.14 31 24.0	47.98	16 16.89	0.052	14 42 52.81

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	274	188 15 3.9	14 25.6	147.66	—0.06	0.0001453	52.7	11 17 29.09
2	275	189 14 8.9	13 30.5	147.75	+0.09	0.0000191	52.5	11 13 33.19
3	276	190 13 15.8	12 37.2	147.83	0.22	9.9998935	52.2	11 9 37.28
4	277	191 12 24.9	11 46.2	147.92	0.35	.9997683	52.0	11 5 41.37
5	278	192 11 36.0	10 57.2	148.01	0.46	.9996439	51.8	11 1 45.46
6	279	193 10 49.3	10 10.4	148.10	0.56	.9995200	51.5	10 57 49.55
7	280	194 10 4.7	9 25.7	148.19	0.62	.9993966	51.3	10 53 53.65
8	281	195 9 22.6	8 43.5	148.28	0.66	.9992737	51.0	10 49 57.74
9	282	196 8 42.7	8 3.4	148.38	0.67	.9991514	50.9	10 46 1.83
10	283	197 8 5.0	7 25.6	148.48	0.65	.9990294	50.8	10 42 5.92
11	284	198 7 29.7	6 50.2	148.58	0.60	.9989077	50.7	10 38 10.01
12	285	199 6 56.9	6 17.3	148.68	0.52	.9987861	50.6	10 34 14.11
13	286	200 6 26.2	5 46.5	148.78	0.42	.9986647	50.6	10 30 18.20
14	287	201 5 57.9	5 18.1	148.87	0.31	.9985434	50.6	10 26 22.29
15	288	202 5 31.9	4 52.0	148.96	0.17	.9984220	50.6	10 22 26.38
16	289	203 5 8.0	4 28.0	149.05	+0.05	.9983004	50.7	10 18 30.47
17	290	204 4 46.3	4 6.1	149.14	—0.07	.9981787	50.7	10 14 34.56
18	291	205 4 26.6	3 46.3	149.22	0.18	.9980570	50.7	10 10 38.65
19	292	206 4 8.9	3 28.5	149.30	0.28	.9979351	50.8	10 6 42.74
20	293	207 3 53.1	3 12.6	149.38	0.35	.9978132	50.8	10 2 46.83
21	294	208 3 39.3	2 58.6	149.46	0.39	.9976913	50.7	9 58 50.92
22	295	209 3 27.1	2 46.3	149.53	0.41	.9975697	50.6	9 54 55.02
23	296	210 3 16.8	2 35.9	149.60	0.40	.9974484	50.5	9 50 59.11
24	297	211 3 8.2	2 27.2	149.67	0.36	.9973274	50.3	9 47 3.20
25	298	212 3 1.2	2 20.0	149.74	0.28	.9972070	50.0	9 43 7.29
26	299	213 2 56.0	2 14.6	149.81	0.19	.9970874	49.7	9 39 11.38
27	300	214 2 52.3	2 10.8	149.88	—0.07	.9969687	49.2	9 35 15.47
28	301	215 2 50.2	2 8.6	149.95	+0.07	.9968511	48.7	9 31 19.56
29	302	216 2 49.8	2 8.1	150.02	0.20	.9967347	48.2	9 27 23.65
30	303	217 2 51.0	2 9.2	150.09	0.34	.9966197	47.6	9 23 27.74
31	304	218 2 54.0	2 12.0	150.16	0.47	.9965062	47.0	9 19 31.83
32	305	219 2 58.8	2 16.6	150.23	+0.59	9.9963942	46.3	9 15 35.92

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	16 4.1	16 10.8	58 51.8	+2.15	59 16.3	+1.96	10 27.1	2.01	13.3
2	16 16.9	16 22.2	59 38.7	1.75	59 58.5	1.51	11 15.5	2.04	14.3
3	16 26.7	16 30.3	60 15.0	1.23	60 27.9	0.92	12 5.2	2.12	15.3
4	16 32.8	16 34.1	60 37.0	+0.59	60 42.0	+0.24	12 57.5	2.26	16.3
5	16 34.3	16 33.5	60 42.8	−0.10	60 39.6	−0.42	13 53.5	2.41	17.3
6	16 31.6	16 28.7	60 32.7	0.72	60 22.3	0.99	14 53.4	2.56	18.3
7	16 25.1	16 20.8	60 8.9	1.21	59 53.2	1.39	15 56.3	2.63	19.3
8	16 16.0	16 10.8	59 35.5	1.54	59 16.4	1.64	16 59.8	2.60	20.3
9	16 5.3	15 59.7	58 56.3	1.70	58 35.6	1.73	18 1.1	2.47	21.3
10	15 54.0	15 48.4	58 14.7	1.73	57 54.0	1.70	18 58.2	2.28	22.3
11	15 42.9	15 37.6	57 33.8	1.65	57 14.2	1.60	19 50.3	2.08	23.3
12	15 32.5	15 27.6	56 55.4	1.54	56 37.3	1.47	20 37.9	1.91	24.3
13	15 22.9	15 18.4	56 20.1	1.40	56 3.7	1.32	21 21.9	1.79	25.3
14	15 14.2	15 10.2	55 48.3	1.25	55 33.8	1.17	22 3.6	1.71	26.3
15	15 6.5	15 3.0	55 20.2	1.10	55 7.5	1.02	22 44.1	1.69	27.3
16	14 59.8	14 56.9	54 55.7	0.94	54 44.9	0.86	23 24.6	1.71	28.3
17	14 54.2	14 51.8	54 35.0	0.78	54 26.2	0.69	ó		29.3
18	14 49.7	14 47.8	54 18.3	0.60	54 11.6	0.50	0 6.2	1.77	0.6
19	14 46.3	14 45.2	54 6.2	0.39	54 2.1	0.28	0 49.6	1.86	1.6
20	14 44.5	14 44.3	53 59.5	−0.15	53 58.4	−0.01	1 35.3	1.96	2.6
21	14 44.5	14 45.2	53 59.2	+0.14	54 1.8	+0.30	2 23.6	2.06	3.6
22	14 46.4	14 48.2	54 6.5	0.48	54 13.3	0.66	3 14.1	2.13	4.6
23	14 50.7	14 53.8	54 22.3	0.85	54 33.6	1.04	4 6.0	2.17	5.6
24	14 57.5	15 1.9	54 47.3	1.23	55 3.4	1.43	4 58.2	2.16	6.6
25	15 6.9	15 12.5	55 21.8	1.63	55 42.5	1.82	5 49.5	2.11	7.6
26	15 18.7	15 25.5	56 5.3	1.98	56 30.1	2.14	6 39.3	2.04	8.6
27	15 32.8	15 40.4	56 56.7	2.28	57 24.8	2.39	7 27.6	1.99	9.6
28	15 48.3	15 56.3	57 53.8	2.43	58 23.1	2.45	8 14.8	1.97	10.6
29	16 4.3	16 12.1	58 52.5	2.43	59 21.3	2.38	9 1.9	1.99	11.6
30	16 19.4	16 26.1	59 48.4	2.15	60 13.0	1.93	9 50.2	2.07	12.6
31	16 32.1	16 37.1	60 34.6	1.66	60 52.7	1.34	10 41.1	2.20	13.6
32	16 40.9	16 43.4	61 6.8	+0.98	61 16.4	+0.58	11 35.9	2.38	14.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 47 30.41	2.1068	S. 9 24 8.6	16.073
1	22 49 36.80	2.1063	9 8 2.1	16.141
2	22 51 43.17	2.1059	8 51 51.7	16.206
3	22 53 49.52	2.1056	8 35 37.4	16.269
4	22 55 55.85	2.1053	8 19 19.3	16.330
5	22 58 2.17	2.1050	8 2 57.7	16.390
6	23 0 8.47	2.1048	7 46 32.5	16.450
7	23 2 14.75	2.1046	7 30 3.7	16.508
8	23 4 21.02	2.1044	7 13 31.4	16.566
9	23 6 27.28	2.1043	6 56 55.7	16.622
10	23 8 33.54	2.1043	6 40 16.7	16.675
11	23 10 39.80	2.1044	6 23 34.6	16.727
12	23 12 46.07	2.1047	6 6 49.4	16.777
13	23 14 52.36	2.1050	5 50 1.2	16.826
14	23 16 58.67	2.1053	5 33 10.1	16.875
15	23 19 5.00	2.1057	5 16 16.1	16.923
16	23 21 11.36	2.1062	4 59 19.3	16.968
17	23 23 17.75	2.1067	4 42 19.9	17.010
18	23 25 24.17	2.1073	4 25 18.1	17.050
19	23 27 30.63	2.1081	4 8 13.9	17.090
20	23 29 37.14	2.1089	3 51 7.3	17.130
21	23 31 43.70	2.1098	3 33 58.3	17.169
22	23 33 50.33	2.1108	3 16 47.1	17.204
23	23 35 57.02	2.1118	S. 2 59 33.8	17.238

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 38 3.76	2.1129	S. 2 42 18.5	17.271
1	23 40 10.57	2.1141	2 25 1.3	17.301
2	23 42 17.46	2.1154	2 7 42.4	17.328
3	23 44 24.43	2.1167	1 50 21.9	17.356
4	23 46 31.48	2.1182	1 32 59.8	17.380
5	23 48 38.62	2.1198	1 15 36.3	17.403
6	23 50 45.87	2.1215	0 58 11.4	17.426
7	23 52 53.21	2.1232	0 40 45.2	17.447
8	23 55 0.65	2.1249	0 23 17.8	17.466
9	23 57 8.20	2.1267	S. 0 5 49.3	17.483
10	23 59 15.86	2.1286	N. 0 11 40.2	17.499
11	0 1 23.63	2.1307	0 29 10.6	17.513
12	0 3 31.53	2.1328	0 46 41.8	17.526
13	0 5 39.56	2.1349	1 4 13.7	17.537
14	0 7 47.72	2.1372	1 21 46.2	17.544
15	0 9 56.02	2.1395	1 39 19.0	17.549
16	0 12 4.47	2.1419	1 56 52.1	17.553
17	0 14 13.06	2.1444	2 14 25.4	17.556
18	0 16 21.81	2.1470	2 31 58.8	17.557
19	0 18 30.71	2.1497	2 49 32.2	17.557
20	0 20 39.77	2.1526	3 7 5.6	17.556
21	0 22 49.01	2.1555	3 24 38.9	17.552
22	0 24 58.43	2.1585	3 42 11.9	17.545
23	0 27 8.03	2.1615	3 59 44.3	17.535
24	0 29 17.81	2.1646	N. 4 17 16.1	17.524

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 29 17.81	2.1646	N. 4 17 16.1	17.524
1	0 31 27.78	2.1678	4 34 47.2	17.512
2	0 33 37.94	2.1711	4 52 17.6	17.500
3	0 35 48.30	2.1744	5 9 47.2	17.486
4	0 37 58.86	2.1779	5 27 15.9	17.469
5	0 40 9.63	2.1812	5 44 43.5	17.447
6	0 42 20.60	2.1847	6 2 9.7	17.426
7	0 44 31.78	2.1884	6 19 34.6	17.402
8	0 46 43.19	2.1922	6 36 58.0	17.378
9	0 48 54.84	2.1962	6 54 19.9	17.351
10	0 51 6.73	2.2002	7 11 40.1	17.321
11	0 53 18.86	2.2042	7 28 58.4	17.288
12	0 55 31.23	2.2083	7 46 14.7	17.254
13	0 57 43.85	2.2124	8 3 28.9	17.220
14	0 59 56.72	2.2166	8 20 41.0	17.183
15	1 2 9.84	2.2208	8 37 50.9	17.145
16	1 4 23.22	2.2251	8 54 58.4	17.103
17	1 6 36.85	2.2295	9 12 3.3	17.058
18	1 8 50.75	2.2341	9 29 5.4	17.012
19	1 11 4.93	2.2388	9 46 4.7	16.966
20	1 13 19.40	2.2436	10 3 1.1	16.916
21	1 15 34.16	2.2484	10 19 54.6	16.866
22	1 17 49.21	2.2532	10 36 45.0	16.811
23	1 20 4.54	2.2579	N.10 53 32.0	16.755

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 22 20.16	2.2628	N.11 10 15.6	16.698
1	1 24 36.08	2.2679	11 26 55.7	16.638
2	1 26 52.31	2.2731	11 43 32.1	16.575
3	1 29 8.85	2.2783	12 0 4.7	16.511
4	1 31 25.71	2.2836	12 16 33.4	16.444
5	1 33 42.88	2.2887	12 32 58.0	16.375
6	1 36 0.36	2.2941	12 49 18.4	16.306
7	1 38 18.17	2.2997	13 5 34.7	16.233
8	1 40 36.32	2.3052	13 21 46.4	16.158
9	1 42 54.80	2.3107	13 37 53.6	16.082
10	1 45 13.61	2.3162	13 53 56.2	16.005
11	1 47 32.74	2.3217	14 9 53.9	15.924
12	1 49 52.20	2.3273	14 25 46.7	15.840
13	1 52 12.01	2.3331	14 41 34.5	15.753
14	1 54 32.17	2.3390	14 57 17.1	15.665
15	1 56 52.70	2.3449	15 12 54.3	15.575
16	1 59 13.58	2.3506	15 28 26.1	15.483
17	2 1 34.80	2.3567	15 43 52.3	15.389
18	2 3 56.38	2.3627	15 59 12.8	15.295
19	2 6 18.32	2.3687	16 14 27.6	15.196
20	2 8 40.62	2.3747	16 29 36.3	15.096
21	2 11 3.28	2.3807	16 44 39.1	14.993
22	2 13 26.31	2.3869	16 59 35.5	14.888
23	2 15 49.71	2.3932	17 14 25.7	14.782
24	2 18 13.49	2.3994	N.17 29 9.4	14.674

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	MONDAY 5.					**WEDNESDAY 7.**			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	2 18 13.49	2.3994	N.17 29 9.4	14.674	0	4 20 18.03	2.6671	N.26 31 2.6	7.239
1	2 20 37.64	2.4055	17 43 46.6	14.563	1	4 22 58.17	2.6707	26 38 11.2	7.047
2	2 23 2.15	2.4116	17 58 17.0	14.450	2	4 25 38.52	2.6740	26 45 8.2	6.853
3	2 25 27.03	2.4179	18 12 40.6	14.336	3	4 28 19.06	2.6772	26 51 53.6	6.659
4	2 27 52.29	2.4242	18 26 57.2	14.217	4	4 30 59.78	2.6802	26 58 27.3	6.465
5	2 30 17.93	2.4305	18 41 6.7	14.099	5	4 33 40.68	2.6831	27 4 49.5	6.271
6	2 32 43.95	2.4368	18 55 9.1	13.978	6	4 36 21.75	2.6859	27 10 59.8	6.072
7	2 35 10.35	2.4431	19 9 4.1	13.855	7	4 39 2.99	2.6887	27 16 58.2	5.875
8	2 37 37.13	2.4494	19 22 51.7	13.730	8	4 41 44.39	2.6912	27 22 44.8	5.679
9	2 40 4.28	2.4556	19 36 31.7	13.603	9	4 44 25.94	2.6936	27 28 19.5	5.482
10	2 42 31.80	2.4618	19 50 4.1	13.473	10	4 47 7.62	2.6957	27 33 42.4	5.280
11	2 44 59.70	2.4681	20 3 28.5	13.341	11	4 49 49.42	2.6977	27 38 53.2	5.080
12	2 47 27.97	2.4744	20 16 45.0	13.205	12	4 52 31.34	2.6996	27 43 52.0	4.880
13	2 49 56.62	2.4807	20 29 53.3	13.072	13	4 55 13.37	2.7013	27 48 38.8	4.679
14	2 52 25.65	2.4870	20 42 53.7	12.937	14	4 57 55.50	2.7028	27 53 13.5	4.477
15	2 54 55.06	2.4932	20 55 45.7	12.796	15	5 0 37.71	2.7041	27 57 36.1	4.276
16	2 57 24.84	2.4995	21 8 29.2	12.654	16	5 3 19.99	2.7052	28 1 46.6	4.075
17	2 59 55.00	2.5058	21 21 4.2	12.512	17	5 6 2.33	2.7062	28 5 45.0	3.872
18	3 2 25.54	2.5121	21 33 30.6	12.367	18	5 8 44.73	2.7071	28 9 31.2	3.668
19	3 4 56.45	2.5182	21 45 48.2	12.220	19	5 11 27.18	2.7077	28 13 5.2	3.466
20	3 7 27.72	2.5242	21 57 57.0	12.072	20	5 14 9.66	2.7080	28 16 27.1	3.263
21	3 9 59.35	2.5302	22 9 56.8	11.921	21	5 16 52.17	2.7080	28 19 36.8	3.061
22	3 12 31.34	2.5362	22 21 47.5	11.768	22	5 19 34.68	2.7079	28 22 34.4	2.855
23	3 15 3.69	2.5422	N.22 33 29.0	11.614	23	5 22 17.15	2.7077	N.28 25 19.6	2.652
	TUESDAY 6.					**THURSDAY 8.**			
0	3 17 36.40	2.5482	N.22 45 1.2	11.458	0	5 24 59.60	2.7074	N.28 27 52.7	2.450
1	3 20 9.47	2.5542	22 56 23.9	11.298	1	5 27 42.04	2.7070	28 30 13.6	2.246
2	3 22 42.90	2.5601	23 7 37.1	11.140	2	5 30 24.46	2.7065	28 32 22.2	2.042
3	3 25 16.68	2.5658	23 18 40.7	10.979	3	5 33 6.84	2.7057	28 34 18.7	1.841
4	3 27 50.80	2.5714	23 29 34.6	10.816	4	5 35 49.16	2.7048	28 36 3.1	1.637
5	3 30 25.25	2.5769	23 40 18.5	10.650	5	5 38 31.42	2.7036	28 37 35.1	1.433
6	3 33 0.03	2.5825	23 50 52.6	10.484	6	5 41 13.59	2.7021	28 38 55.1	1.232
7	3 35 35.15	2.5882	24 1 16.6	10.316	7	5 43 55.67	2.7005	28 40 2.9	1.029
8	3 38 10.61	2.5937	24 11 30.5	10.146	8	5 46 37.65	2.6988	28 40 58.6	0.828
9	3 40 46.40	2.5992	24 21 34.1	9.975	9	5 49 19.53	2.6970	28 41 42.2	0.626
10	3 43 22.51	2.6044	24 31 27.5	9.802	10	5 52 1.29	2.6949	28 42 13.7	0.427
11	3 45 58.93	2.6095	24 41 10.4	9.628	11	5 54 42.92	2.6927	28 42 33.3	0.226
12	3 48 35.65	2.6144	24 50 42.8	9.452	12	5 57 24.41	2.6902	28 42 40.8	0.026
13	3 51 12.66	2.6193	25 0 4.6	9.275	13	6 0 5.74	2.6874	28 42 36.3	0.175
14	3 53 49.97	2.6243	25 9 15.8	9.096	14	6 2 46.90	2.6844	28 42 19.8	0.374
15	3 56 27.58	2.6292	25 18 16.1	8.916	15	6 5 27.88	2.6815	28 41 51.4	0.572
16	3 59 5.48	2.6340	25 27 5.7	8.735	16	6 8 8.68	2.6783	28 41 11.2	0.768
17	4 1 43.66	2.6386	25 35 44.3	8.552	17	6 10 49.28	2.6749	28 40 19.2	0.964
18	4 4 22.11	2.6430	25 44 11.9	8.368	18	6 13 29.67	2.6713	28 39 15.5	1.159
19	4 7 0.82	2.6472	25 52 28.4	8.183	19	6 16 9.84	2.6676	28 38 0.1	1.354
20	4 9 39.77	2.6513	26 0 33.9	7.997	20	6 18 49.78	2.6637	28 36 33.0	1.550
21	4 12 18.97	2.6554	26 8 28.0	7.808	21	6 21 29.49	2.6598	28 34 54.1	1.745
22	4 14 58.42	2.6595	26 16 10.9	7.621	22	6 24 8.97	2.6559	28 33 3.6	1.938
23	4 17 38.11	2.6634	26 23 42.5	7.431	23	6 26 48.20	2.6517	28 31 1.6	2.128
24	4 20 18.03	2.6671	N.26 31 2.6	7.239	24	6 29 27.17	2.6472	N.28 28 48.2	2.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 29 27.17	2.6472	N.28 28 48.2	2.319
1	6 32 5.87	2.6425	28 26 23.4	2.508
2	6 34 44.27	2.6376	28 23 47.3	2.696
3	6 37 22.37	2.6327	28 20 59.9	2.883
4	6 40 0.18	2.6276	28 18 1.3	3.069
5	6 42 37.68	2.6224	28 14 51.6	3.254
6	6 45 14.86	2.6169	28 11 30.8	3.439
7	6 47 51.71	2.6114	28 7 58.9	3.622
8	6 50 28.23	2.6058	28 4 16.2	3.802
9	6 53 4.41	2.6002	28 0 22.7	3.982
10	6 55 40.25	2.5944	27 56 18.3	4.162
11	6 58 15.74	2.5885	27 52 3.3	4.339
12	7 0 50.87	2.5823	27 47 37.7	4.515
13	7 3 25.62	2.5760	27 43 1.5	4.690
14	7 5 59.99	2.5697	27 38 14.9	4.863
15	7 8 33.99	2.5634	27 33 17.9	5.035
16	7 11 7.60	2.5569	27 28 10.7	5.206
17	7 13 40.82	2.5503	27 22 53.2	5.376
18	7 16 13.64	2.5435	27 17 25.6	5.543
19	7 18 46.05	2.5367	27 11 48.0	5.709
20	7 21 18.05	2.5298	27 6 0.5	5.875
21	7 23 49.63	2.5229	27 0 3.1	6.038
22	7 26 20.80	2.5159	26 53 56.0	6.199
23	7 28 51.54	2.5088	N.26 47 39.2	6.359

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 31 21.85	2.5016	N.26 41 12.9	6.517
1	7 33 51.73	2.4944	26 34 37.1	6.676
2	7 36 21.18	2.4871	26 27 51.8	6.832
3	7 38 50.19	2.4797	26 20 57.3	6.985
4	7 41 18.75	2.4722	26 13 53.6	7.137
5	7 43 46.86	2.4647	26 6 40.8	7.288
6	7 46 14.51	2.4571	25 59 19.0	7.438
7	7 48 41.71	2.4495	25 51 48.3	7.585
8	7 51 8.45	2.4419	25 44 8.8	7.732
9	7 53 34.74	2.4344	25 36 20.5	7.878
10	7 56 0.58	2.4268	25 28 23.5	8.021
11	7 58 25.96	2.4192	25 20 18.0	8.162
12	8 0 50.88	2.4115	25 12 4.1	8.301
13	8 3 15.34	2.4037	25 3 41.9	8.438
14	8 5 39.32	2.3957	24 55 11.5	8.574
15	8 8 2.83	2.3878	24 46 33.0	8.708
16	8 10 25.86	2.3798	24 37 46.5	8.841
17	8 12 48.41	2.3718	24 28 52.1	8.972
18	8 15 10.48	2.3639	24 19 49.9	9.101
19	8 17 32.07	2.3561	24 10 40.0	9.229
20	8 19 53.21	2.3483	24 1 22.4	9.357
21	8 22 13.89	2.3405	23 51 57.2	9.483
22	8 24 34.10	2.3328	23 42 24.5	9.606
23	8 26 53.83	2.3247	23 32 44.5	9.727
24	8 29 13.08	2.3168	N.23 22 57.3	9.846

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 29 13.08	2.3168	N.23 22 57.3	9.846
1	8 31 31.85	2.3090	23 13 3.0	9.962
2	8 33 50.16	2.3013	23 3 1.7	10.080
3	8 36 8.00	2.2935	22 52 53.4	10.195
4	8 38 25.38	2.2857	22 42 38.3	10.308
5	8 40 42.30	2.2782	22 32 16.5	10.418
6	8 42 58.76	2.2705	22 21 48.1	10.527
7	8 45 14.76	2.2626	22 11 13.2	10.636
8	8 47 30.28	2.2547	22 0 31.8	10.743
9	8 49 45.32	2.2468	21 49 44.0	10.849
10	8 51 59.89	2.2390	21 38 49.9	10.953
11	8 54 14.00	2.2313	21 27 49.6	11.054
12	8 56 27.65	2.2237	21 16 43.3	11.155
13	8 58 40.84	2.2161	21 5 31.0	11.255
14	9 0 53.58	2.2086	20 54 12.8	11.351
15	9 3 5.87	2.2011	20 42 48.9	11.446
16	9 5 17.71	2.1936	20 31 19.3	11.540
17	9 7 29.10	2.1862	20 19 44.1	11.633
18	9 9 40.05	2.1788	20 8 3.4	11.723
19	9 11 50.56	2.1716	19 56 17.3	11.812
20	9 14 0.64	2.1643	19 44 25.9	11.900
21	9 16 10.28	2.1570	19 32 29.2	11.988
22	9 18 19.49	2.1498	19 20 27.3	12.074
23	9 20 28.27	2.1428	N.19 8 20.3	12.157

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 22 36.63	2.1359	N.18 56 8.4	12.238
1	9 24 44.58	2.1290	18 43 51.7	12.317
2	9 26 52.12	2.1222	18 31 30.3	12.396
3	9 28 59.25	2.1154	18 19 4.2	12.475
4	9 31 5.97	2.1086	18 6 33.3	12.553
5	9 33 12.28	2.1018	17 53 57.8	12.629
6	9 35 18.19	2.0952	17 41 17.8	12.703
7	9 37 23.71	2.0887	17 28 33.4	12.775
8	9 39 28.84	2.0823	17 15 44.8	12.844
9	9 41 33.59	2.0759	17 2 52.1	12.912
10	9 43 37.95	2.0695	16 49 55.4	12.979
11	9 45 41.92	2.0631	16 36 54.6	13.046
12	9 47 45.51	2.0567	16 23 49.9	13.110
13	9 49 48.72	2.0503	16 10 41.4	13.174
14	9 51 51.55	2.0441	15 57 29.0	13.238
15	9 53 54.01	2.0380	15 44 12.8	13.301
16	9 55 56.11	2.0321	15 30 52.9	13.361
17	9 57 57.86	2.0262	15 17 29.5	13.418
18	9 59 59.26	2.0203	15 4 2.7	13.475
19	10 2 0.31	2.0145	14 50 32.5	13.531
20	10 4 1.00	2.0087	14 36 59.0	13.586
21	10 6 1.35	2.0029	14 23 22.2	13.640
22	10 8 1.35	1.9973	14 9 42.2	13.692
23	10 10 1.02	1.9919	13 55 59.2	13.743
24	10 12 0.37	1.9866	N.13 42 13.2	13.790

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	TUESDAY 13.					THURSDAY 15.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	10 12 0.37	1.9866	N.13 42 13.2	13.790	0	11 42 37.81	1.8191	N. 2 4 25.9	14.880
1	10 13 59.41	1.9814	13 28 24.4	13.838	1	11 44 26.91	1.8176	1 49 33.1	14.880
2	10 15 58.14	1.9762	13 14 32.6	13.887	2	11 46 15.92	1.8161	1 34 40.3	14.878
3	10 17 56.56	1.9711	13 0 37.9	13.934	3	11 48 4.84	1.8146	1 19 47.6	14.877
4	10 19 54.68	1.9660	12 46 40.5	13.979	4	11 49 53.68	1.8132	1 4 55.0	14.874
5	10 21 52.48	1.9609	12 32 40.5	14.022	5	11 51 42.43	1.8118	0 50 2.7	14.868
6	10 23 49.98	1.9560	12 18 37.9	14.064	6	11 53 31.11	1.8105	0 35 10.8	14.861
7	10 25 47.20	1.9512	12 4 32.8	14.106	7	11 55 19.70	1.8093	0 20 19.4	14.852
8	10 27 44.13	1.9464	11 50 25.2	14.147	8	11 57 8.23	1.8084	N. 0 5 28.5	14.843
9	10 29 40.77	1.9416	11 36 15.1	14.188	9	11 58 56.71	1.8076	S. 0 9 21.8	14.834
10	10 31 37.12	1.9369	11 22 2.7	14.228	10	12 0 45.14	1.8068	0 24 11.6	14.825
11	10 33 33.20	1.9324	11 7 48.0	14.264	11	12 2 33.52	1.8059	0 39 0.8	14.814
12	10 35 29.01	1.9280	10 53 31.2	14.297	12	12 4 21.85	1.8051	0 53 49.3	14.802
13	10 37 24.56	1.9237	10 39 12.4	14.330	13	12 6 10.13	1.8043	1 8 37.1	14.791
14	10 39 19.85	1.9194	10 24 51.6	14.363	14	12 7 58.37	1.8036	1 23 24.2	14.778
15	10 41 14.88	1.9151	10 10 28.8	14.396	15	12 9 46.57	1.8029	1 38 10.5	14.765
16	10 43 9.66	1.9109	9 56 4.1	14.427	16	12 11 34.73	1.8024	1 52 56.0	14.751
17	10 45 4.19	1.9068	9 41 37.6	14.456	17	12 13 22.86	1.8020	2 7 40.6	14.735
18	10 46 58.47	1.9028	9 27 9.4	14.484	18	12 15 10.97	1.8017	2 22 24.2	14.718
19	10 48 52.52	1.8988	9 12 39.5	14.512	19	12 16 59.07	1.8014	2 37 6.7	14.700
20	10 50 46.33	1.8949	8 58 7.9	14.540	20	12 18 47.15	1.8012	2 51 48.2	14.682
21	10 52 39.91	1.8912	8 43 34.7	14.567	21	12 20 35.21	1.8010	3 6 28.6	14.664
22	10 54 33.27	1.8876	8 29 0.0	14.590	22	12 22 23.27	1.8009	3 21 7.9	14.645
23	10 56 26.42	1.8842	N. 8 14 23.9	14.618	23	12 24 11.32	1.8008	S. 3 35 46.0	14.624
	WEDNESDAY 14.					FRIDAY 16.			
0	10 58 19.37	1.8807	N. 7 59 46.4	14.635	0	12 25 59.37	1.8008	S. 3 50 22.8	14.602
1	11 0 12.11	1.8772	7 45 7.6	14.658	1	12 27 47.43	1.8010	4 4 58.3	14.580
2	11 2 4.64	1.8737	7 30 27.5	14.679	2	12 29 35.50	1.8012	4 19 32.4	14.556
3	11 3 56.96	1.8703	7 15 46.1	14.700	3	12 31 23.58	1.8015	4 34 5.0	14.531
4	11 5 49.08	1.8671	7 1 3.5	14.718	4	12 33 11.68	1.8018	4 48 36.1	14.506
5	11 7 41.01	1.8640	6 46 19.9	14.735	5	12 34 59.80	1.8022	5 3 5.6	14.47
6	11 9 32.75	1.8610	6 31 35.3	14.752	6	12 36 47.94	1.8026	5 17 33.5	14.452
7	11 11 24.32	1.8581	6 16 49.7	14.768	7	12 38 36.11	1.8031	5 31 59.8	14.425
8	11 13 15.72	1.8552	6 2 3.2	14.782	8	12 40 24.31	1.8037	5 46 24.5	14.398
9	11 15 6.95	1.8523	5 47 15.9	14.794	9	12 42 12.55	1.8044	6 0 47.5	14.369
10	11 16 58.01	1.8494	5 32 27.9	14.806	10	12 44 0.84	1.8052	6 15 8.8	14.340
11	11 18 48.89	1.8467	5 17 39.2	14.817	11	12 45 49.18	1.8061	6 29 28.3	14.309
12	11 20 39.61	1.8441	5 2 49.9	14.827	12	12 47 37.57	1.8069	6 43 45.9	14.277
13	11 22 30.18	1.8417	4 48 0.0	14.837	13	12 49 26.01	1.8077	6 58 1.5	14.243
14	11 24 20.61	1.8393	4 33 9.5	14.847	14	12 51 14.50	1.8087	7 12 15.1	14.210
15	11 26 10.90	1.8370	4 18 18.4	14.856	15	12 53 3.05	1.8097	7 26 26.7	14.176
16	11 28 1.05	1.8348	4 3 26.8	14.863	16	12 54 51.67	1.8108	7 40 36.2	14.141
17	11 29 51.07	1.8327	3 48 34.8	14.868	17	12 56 40.35	1.8119	7 54 43.6	14.105
18	11 31 40.97	1.8307	3 33 42.6	14.873	18	12 58 29.11	1.8131	8 8 48.8	14.068
19	11 33 30.75	1.8286	3 18 50.1	14.877	19	13 0 17.93	1.8144	8 22 51.8	14.031
20	11 35 20.40	1.8265	3 3 57.4	14.879	20	13 2 6.83	1.8158	8 36 52.5	13.992
21	11 37 9.93	1.8245	2 49 4.6	14.882	21	13 3 55.82	1.8172	8 50 50.9	13.954
22	11 38 59.33	1.8226	2 34 11.7	14.882	22	13 5 44.90	1.8187	9 4 47.0	13.915
23	11 40 48.62	1.8206	2 19 18.8	14.882	23	13 7 34.07	1.8203	9 18 40.7	13.874
24	11 42 37.81	1.8191	N. 2 4 25.9	14.880	24	13 9 23.34	1.8220	S. 9 32 31.8	13.832

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	13 9 23.34	1.8220	S. 9 32 31.8	13.832
1	13 11 12.71	1.8237	9 46 20.4	13.790
2	13 13 2.18	1.8254	10 0 6.5	13.746
3	13 14 51.75	1.8271	10 13 49.9	13.701
4	13 16 41.43	1.8289	10 27 30.6	13.656
5	13 18 31.22	1.8307	10 41 8.6	13.610
6	13 20 21.12	1.8327	10 54 43.8	13.562
7	13 22 11.14	1.8347	11 8 16.1	13.514
8	13 24 1.28	1.8367	11 21 45.5	13.467
9	13 25 51.54	1.8387	11 35 12.0	13.417
10	13 27 41.93	1.8409	11 48 35.5	13.367
11	13 29 32.45	1.8431	12 1 56.0	13.316
12	13 31 23.10	1.8453	12 15 13.4	13.264
13	13 33 13.89	1.8477	12 28 27.7	13.212
14	13 35 4.82	1.8501	12 41 38.9	13.158
15	13 36 55.90	1.8526	12 54 46.8	13.104
16	13 38 47.13	1.8552	13 7 51.4	13.049
17	13 40 38.52	1.8578	13 20 52.7	12.993
18	13 42 30.07	1.8606	13 33 50.6	12.937
19	13 44 21.78	1.8631	13 46 45.1	12.879
20	13 46 13.64	1.8657	13 59 36.1	12.821
21	13 48 5.66	1.8685	14 12 23.6	12.762
22	13 49 57.84	1.8711	14 25 7.5	12.701
23	13 51 50.19	1.8739	S.14 37 47.7	12.639

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 53 42.73	1.8767	S.14 50 24.2	12.578
1	13 55 35.42	1.8797	15 2 57.1	12.517
2	13 57 28.29	1.8828	15 15 26.2	12.452
3	13 59 21.34	1.8859	15 27 51.4	12.388
4	14 1 14.58	1.8890	15 40 12.7	12.322
5	14 3 8.01	1.8921	15 52 30.1	12.257
6	14 5 1.63	1.8952	16 4 43.6	12.190
7	14 6 55.44	1.8983	16 16 52.9	12.122
8	14 8 49.44	1.9015	16 28 58.2	12.054
9	14 10 43.63	1.9047	16 40 59.4	11.985
10	14 12 38.01	1.9080	16 52 56.4	11.913
11	14 14 32.59	1.9113	17 4 49.1	11.842
12	14 16 27.37	1.9147	17 16 37.5	11.771
13	14 18 22.36	1.9182	17 28 21.6	11.698
14	14 20 17.56	1.9217	17 40 1.3	11.624
15	14 22 12.97	1.9252	17 51 36.5	11.549
16	14 24 8.59	1.9288	18 3 7.2	11.474
17	14 26 4.43	1.9325	18 14 33.4	11.399
18	14 28 0.50	1.9362	18 25 55.1	11.322
19	14 29 56.78	1.9398	18 37 12.1	11.244
20	14 31 53.28	1.9434	18 48 24.4	11.165
21	14 33 49.99	1.9470	18 59 31.9	11.086
22	14 35 46.92	1.9507	19 10 34.6	11.006
23	14 37 44.07	1.9544	19 21 32.4	10.922
24	14 39 41.45	1.9582	S.19 32 25.3	10.842

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 39 41.45	1.9582	S.19 32 25.3	10.842
1	14 41 39.05	1.9619	19 43 13.3	10.758
2	14 43 36.88	1.9656	19 53 56.3	10.674
3	14 45 34.95	1.9698	20 4 34.2	10.590
4	14 47 33.27	1.9740	20 15 7.1	10.505
5	14 49 31.83	1.9778	20 25 34.8	10.417
6	14 51 30.61	1.9817	20 35 57.2	10.330
7	14 53 29.63	1.9856	20 46 14.4	10.242
8	14 55 28.89	1.9896	20 56 26.3	10.154
9	14 57 28.38	1.9935	21 6 32.9	10.064
10	14 59 28.11	1.9975	21 16 34.0	9.973
11	15 1 28.08	2.0015	21 26 29.7	9.882
12	15 3 28.29	2.0056	21 36 19.9	9.789
13	15 5 28.75	2.0097	21 46 4.4	9.696
14	15 7 29.45	2.0138	21 55 43.4	9.603
15	15 9 30.40	2.0179	22 5 16.8	9.508
16	15 11 31.60	2.0219	22 14 44.4	9.412
17	15 13 33.04	2.0259	22 24 6.2	9.316
18	15 15 34.71	2.0299	22 33 22.3	9.220
19	15 17 36.63	2.0342	22 42 32.6	9.122
20	15 19 38.81	2.0384	22 51 37.0	9.022
21	15 21 41.24	2.0425	23 0 35.3	8.922
22	15 23 43.91	2.0466	23 9 27.6	8.822
23	15 25 46.83	2.0507	S.23 18 13.9	8.719

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 27 49.99	2.0548	S.23 26 54.1	8.619
1	15 29 53.40	2.0589	23 35 28.1	8.515
2	15 31 57.06	2.0630	23 43 55.9	8.412
3	15 34 0.97	2.0672	23 52 17.5	8.306
4	15 36 5.13	2.0713	24 0 32.7	8.201
5	15 38 9.53	2.0754	24 8 41.6	8.096
6	15 40 14.18	2.0796	24 16 44.2	7.986
7	15 42 19.08	2.0837	24 24 40.2	7.880
8	15 44 24.23	2.0877	24 32 29.7	7.772
9	15 46 29.61	2.0917	24 40 12.7	7.660
10	15 48 35.23	2.0957	24 47 49.1	7.553
11	15 50 41.09	2.0997	24 55 19.0	7.441
12	15 52 47.19	2.1037	25 2 42.1	7.329
13	15 54 53.53	2.1077	25 9 58.5	7.217
14	15 57 0.11	2.1117	25 17 8.1	7.104
15	15 59 6.93	2.1157	25 24 11.0	6.991
16	16 1 13.99	2.1197	25 31 7.0	6.876
17	16 3 21.29	2.1237	25 37 56.1	6.760
18	16 5 28.83	2.1277	25 44 38.2	6.645
19	16 7 36.61	2.1316	25 51 13.5	6.529
20	16 9 44.61	2.1352	25 57 41.7	6.412
21	16 11 52.83	2.1389	26 4 2.9	6.294
22	16 14 1.27	2.1426	26 10 17.0	6.174
23	16 16 9.93	2.1462	26 16 23.8	6.054
24	16 18 18.81	2.1498	S.26 22 23.5	5.936

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 18 18.81	2.1498	S.26 22 23.5	5.936
1	16 20 27.91	2.1535	26 28 16.1	5.816
2	16 22 37.23	2.1572	26 34 1.4	5.693
3	16 24 46.77	2.1608	26 39 39.3	5.570
4	16 26 56.53	2.1645	26 45 9.8	5.445
5	16 29 6.51	2.1682	26 50 32.8	5.321
6	16 31 16.72	2.1717	26 55 48.3	5.196
7	16 33 27.13	2.1750	27 0 56.3	5.071
8	16 35 37.73	2.1782	27 5 56.8	4.946
9	16 37 48.52	2.1814	27 10 49.8	4.822
10	16 39 59.50	2.1846	27 15 35.3	4.697
11	16 42 10.67	2.1878	27 20 13.3	4.569
12	16 44 22.03	2.1910	27 24 43.6	4.442
13	16 46 33.59	2.1942	27 29 6.3	4.313
14	16 48 45.34	2.1974	27 33 21.3	4.183
15	16 50 57.28	2.2006	27 37 28.4	4.052
16	16 53 9.40	2.2033	27 41 27.6	3.921
17	16 55 21.68	2.2061	27 45 18.9	3.789
18	16 57 34.13	2.2089	27 49 2.2	3.658
19	16 59 46.75	2.2117	27 52 37.8	3.528
20	17 1 59.54	2.2144	27 56 5.6	3.398
21	17 4 12.50	2.2171	27 59 25.6	3.265
22	17 6 25.61	2.2197	28 2 37.5	3.131
23	17 8 38.87	2.2222	S.28 5 41.3	2.997

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	17 10 52.28	2.2246	S.28 8 37.1	2.862
1	17 13 5.84	2.2270	28 11 24.8	2.729
2	17 15 19.54	2.2294	28 14 4.5	2.594
3	17 17 33.38	2.2317	28 16 36.1	2.458
4	17 19 47.35	2.2339	28 18 59.5	2.322
5	17 22 1.45	2.2362	28 21 14.7	2.185
6	17 24 15.69	2.2383	28 23 21.7	2.048
7	17 26 30.05	2.2402	28 25 20.4	1.911
8	17 28 44.52	2.2421	28 27 11.0	1.775
9	17 30 59.10	2.2438	28 28 53.4	1.638
10	17 33 13.78	2.2456	28 30 27.6	1.501
11	17 35 28.57	2.2473	28 31 53.5	1.364
12	17 37 43.46	2.2488	28 33 11.2	1.226
13	17 39 58.44	2.2504	28 34 20.4	1.085
14	17 42 13.51	2.2519	28 35 21.3	0.945
15	17 44 28.66	2.2533	28 36 13.8	0.805
16	17 46 43.90	2.2547	28 36 57.9	0.665
17	17 48 59.23	2.2562	28 37 33.6	0.525
18	17 51 14.65	2.2573	28 38 0.9	0.385
19	17 53 30.13	2.2584	28 38 19.8	0.245
20	17 55 45.66	2.2593	28 38 30.3	0.105
21	17 58 1.24	2.2601	28 38 32.4	0.036
22	18 0 16.87	2.2609	28 38 26.0	0.177
23	18 2 32.55	2.2617	28 38 11.2	0.317
24	18 4 48.29	2.2625	S.28 37 47.9	0.459

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	18 4 48.29	2.2625	S.28 37 47.9	0.459
1	18 7 4.06	2.2633	28 37 16.1	0.600
2	18 9 19.88	2.2639	28 36 35.9	0.741
3	18 11 35.73	2.2643	28 35 47.2	0.882
4	18 13 51.60	2.2647	28 34 50.0	1.024
5	18 16 7.49	2.2650	28 33 44.3	1.168
6	18 18 23.40	2.2652	28 32 29.9	1.311
7	18 20 39.32	2.2654	28 31 7.0	1.451
8	18 22 55.25	2.2655	28 29 35.7	1.592
9	18 25 11.18	2.2655	28 27 55.9	1.734
10	18 27 27.11	2.2654	28 26 7.6	1.876
11	18 29 43.03	2.2653	28 24 10.8	2.016
12	18 31 58.94	2.2651	28 22 5.6	2.159
13	18 34 14.84	2.2648	28 19 51.8	2.301
14	18 36 30.72	2.2644	28 17 29.5	2.442
15	18 38 46.58	2.2640	28 14 58.7	2.584
16	18 41 2.41	2.2634	28 12 19.4	2.724
17	18 43 18.21	2.2629	28 9 31.7	2.866
18	18 45 33.96	2.2622	28 6 35.4	3.009
19	18 47 49.67	2.2615	28 3 30.5	3.150
20	18 50 5.34	2.2608	28 0 17.2	3.290
21	18 52 20.97	2.2599	27 56 55.6	3.430
22	18 54 36.55	2.2590	27 53 25.6	3.570
23	18 56 52.06	2.2580	S.27 49 47.2	3.711

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 59 7.51	2.2570	S.27 46 0.3	3.852
1	19 1 22.90	2.2559	27 42 5.0	3.992
2	19 3 38.22	2.2547	27 38 1.2	4.133
3	19 5 53.47	2.2534	27 33 49.0	4.273
4	19 8 8.63	2.2521	27 29 28.4	4.412
5	19 10 23.72	2.2508	27 24 59.5	4.552
6	19 12 38.73	2.2494	27 20 22.2	4.692
7	19 14 53.65	2.2480	27 15 36.5	4.829
8	19 17 8.49	2.2465	27 10 42.6	4.967
9	19 19 23.23	2.2448	27 5 40.4	5.106
10	19 21 37.88	2.2431	27 0 29.9	5.243
11	19 23 52.42	2.2414	26 55 11.2	5.380
12	19 26 6.86	2.2397	26 49 44.3	5.517
13	19 28 21.19	2.2380	26 44 9.2	5.653
14	19 30 35.42	2.2362	26 38 25.9	5.790
15	19 32 49.53	2.2342	26 32 34.4	5.927
16	19 35 3.53	2.2323	26 26 34.7	6.064
17	19 37 17.41	2.2303	26 20 26.8	6.199
18	19 39 31.17	2.2282	26 14 10.8	6.334
19	19 41 44.80	2.2262	26 7 46.7	6.468
20	19 43 58.31	2.2242	26 1 14.6	6.600
21	19 46 11.70	2.2221	25 54 34.6	6.733
22	19 48 24.96	2.2199	25 47 46.6	6.867
23	19 50 38.09	2.2177	25 40 50.6	7.000
24	19 52 51.09	2.2155	S.25 33 46.6	7.132

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 25.					TUESDAY 27.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	19 52 51.09	2.2155	S.25 33 46.6	7.132	0	21 36 20.53	2.0988	S.17 29 58.4	12.772
1	19 55 3.95	2.2132	25 26 34.7	7.264	1	21 38 26.40	2.0968	17 17 9.1	12.871
2	19 57 16.67	2.2108	25 19 14.9	7.396	2	21 40 32.15	2.0949	17 4 13.9	12.970
3	19 59 29.25	2.2085	25 11 47.2	7.527	3	21 42 37.79	2.0930	16 51 12.7	13.068
4	20 1 41.69	2.2062	25 4 11.7	7.656	4	21 44 43.32	2.0911	16 38 5.7	13.165
5	20 3 53.99	2.2038	24 56 28.5	7.786	5	21 46 48.73	2.0892	16 24 52.9	13.262
6	20 6 6.15	2.2015	24 48 37.5	7.916	6	21 48 54.03	2.0874	16 11 34.3	13.357
7	20 8 18.15	2.1990	24 40 38.7	8.044	7	21 50 59.23	2.0857	15 58 10.0	13.452
8	20 10 30.01	2.1964	24 32 32.2	8.172	8	21 53 4.33	2.0840	15 44 40.0	13.547
9	20 12 41.72	2.1940	24 24 18.0	8.300	9	21 55 9.33	2.0823	15 31 4.4	13.640
10	20 14 53.29	2.1914	24 15 56.2	8.427	10	21 57 14.22	2.0807	15 17 23.2	13.732
11	20 17 4.69	2.1887	24 7 26.8	8.552	11	21 59 19.02	2.0792	15 3 36.5	13.823
12	20 19 15.94	2.1863	23 58 49.9	8.678	12	22 1 23.73	2.0777	14 49 44.4	13.913
13	20 21 27.05	2.1838	23 50 5.4	8.804	13	22 3 28.35	2.0763	14 35 46.9	14.003
14	20 23 38.00	2.1812	23 41 13.4	8.929	14	22 5 32.89	2.0750	14 21 44.1	14.091
15	20 25 48.80	2.1787	23 32 13.9	9.053	15	22 7 37.35	2.0737	14 7 36.0	14.178
16	20 27 59.44	2.1762	23 23 7.0	9.177	16	22 9 41.73	2.0724	13 53 22.7	14.265
17	20 30 9.93	2.1736	23 13 52.7	9.300	17	22 11 46.04	2.0712	13 39 4.2	14.351
18	20 32 20.27	2.1711	23 4 31.0	9.422	18	22 13 50.27	2.0700	13 24 40.6	14.435
19	20 34 30.46	2.1685	22 55 2.0	9.543	19	22 15 54.44	2.0690	13 10 12.0	14.517
20	20 36 40.49	2.1658	22 45 25.8	9.664	20	22 17 58.55	2.0680	12 55 38.5	14.602
21	20 38 50.36	2.1632	22 35 42.3	9.787	21	22 20 2.60	2.0670	12 40 59.9	14.684
22	20 41 0.07	2.1606	22 25 51.4	9.907	22	22 22 6.59	2.0660	12 26 16.4	14.763
23	20 43 9.63	2.1581	S.22 15 53.5	10.024	23	22 24 10.53	2.0652	S.12 11 28.2	14.843
	MONDAY 26.					WEDNESDAY 28.			
0	20 45 19.04	2.1555	S.22 5 48.5	10.142	0	22 26 14.42	2.0645	S.11 56 35.2	14.922
1	20 47 28.29	2.1528	21 55 36.4	10.261	1	22 28 18.27	2.0637	11 41 37.5	15.000
2	20 49 37.38	2.1502	21 45 17.2	10.378	2	22 30 22.07	2.0631	11 26 35.2	15.077
3	20 51 46.32	2.1478	21 34 51.0	10.494	3	22 32 25.84	2.0626	11 11 28.3	15.154
4	20 53 55.12	2.1453	21 24 17.9	10.610	4	22 34 29.58	2.0621	10 56 16.8	15.226
5	20 56 3.76	2.1427	21 13 37.8	10.725	5	22 36 33.29	2.0616	10 41 0.9	15.300
6	20 58 12.25	2.1402	21 2 50.9	10.839	6	22 38 36.97	2.0612	10 25 40.7	15.373
7	21 0 20.59	2.1377	20 51 57.1	10.953	7	22 40 40.63	2.0610	10 10 16.1	15.446
8	21 2 28.78	2.1352	20 40 56.5	11.067	8	22 42 44.28	2.0607	9 54 47.2	15.517
9	21 4 36.81	2.1327	20 29 49.1	11.179	9	22 44 47.92	2.0606	9 39 14.0	15.586
10	21 6 44.70	2.1303	20 18 35.0	11.287	10	22 46 51.55	2.0604	9 23 36.8	15.655
11	21 8 52.45	2.1279	20 7 14.3	11.399	11	22 48 55.17	2.0603	9 7 55.6	15.721
12	21 11 0.05	2.1255	19 55 46.9	11.511	12	22 50 58.78	2.0602	8 52 10.4	15.786
13	21 13 7.51	2.1231	19 44 13.0	11.620	13	22 53 2.40	2.0604	8 36 21.3	15.851
14	21 15 14.83	2.1207	19 32 32.5	11.729	14	22 55 6.03	2.0607	8 20 28.1	15.916
15	21 17 22.00	2.1183	19 20 45.5	11.837	15	22 57 9.68	2.0610	8 4 31.1	15.980
16	21 19 29.03	2.1160	19 8 52.1	11.943	16	22 59 13.35	2.0614	7 48 30.4	16.043
17	21 21 35.93	2.1138	18 56 52.3	12.050	17	23 1 17.05	2.0619	7 32 26.1	16.101
18	21 23 42.69	2.1116	18 44 46.1	12.156	18	23 3 20.78	2.0624	7 16 18.4	16.158
19	21 25 49.32	2.1094	18 32 33.6	12.260	19	23 5 24.54	2.0629	7 0 7.3	16.216
20	21 27 55.82	2.1072	18 20 14.9	12.363	20	23 7 28.33	2.0635	6 43 52.6	16.273
21	21 30 2.19	2.1051	18 7 50.0	12.467	21	23 9 32.16	2.0642	6 27 34.5	16.329
22	21 32 8.43	2.1029	17 55 18.9	12.569	22	23 11 36.04	2.0652	6 11 13.1	16.383
23	21 34 14.54	2.1008	17 42 41.7	12.671	23	23 13 39.98	2.0662	5 54 48.6	16.436
24	21 36 20.53	2.0988	S.17 29 58.4	12.772	24	23 15 43.98	2.0672	S. 5 38 20.9	16.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 15 43.98	2.0672	S. 5 38 20.9	16.486
1	23 17 48.04	2.0682	5 21 50.2	16.537
2	23 19 52.16	2.0692	5 5 16.5	16.587
3	23 21 56.34	2.0704	4 48 39.8	16.636
4	23 24 0.61	2.0719	4 32 0.2	16.682
5	23 26 4.97	2.0734	4 15 17.9	16.727
6	23 28 9.42	2.0749	3 58 32.9	16.772
7	23 30 13.96	2.0764	3 41 45.3	16.815
8	23 32 18.59	2.0780	3 24 55.3	16.854
9	33 34 23.32	2.0798	3 8 3.1	16.892
10	23 36 28.16	2.0816	2 51 8.5	16.930
11	23 38 33.11	2.0835	2 34 11.6	16.966
12	23 40 38.18	2.0855	2 17 12.4	17.002
13	23 42 43.37	2.0876	2 0 11.0	17.037
14	23 44 48.69	2.0898	1 43 7.8	17.069
15	23 46 54.14	2.0921	1 26 2.8	17.099
16	23 48 59.74	2.0946	1 8 56.0	17.129
17	23 51 5.49	2.0971	0 51 47.4	17.158
18	23 53 11.39	2.0996	0 34 37.1	17.183
19	23 55 17.44	2.1022	0 17 25.3	17.206
20	23 57 23.66	2.1050	S. 0 0 12.1	17.230
21	23 59 30.04	2.1077	N. 0 17 2.3	17.252
22	0 1 36.59	2.1106	0 34 18.1	17.273
23	0 3 43.31	2.1135	N. 0 51 35.1	17.291

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 5 50.21	2.1165	N. 1 8 53.1	17.308
1	0 7 57.30	2.1197	1 26 12.0	17.322
2	0 10 4.58	2.1231	1 43 31.8	17.336
3	0 12 12.07	2.1266	2 0 52.3	17.348
4	0 14 19.77	2.1301	2 18 13.5	17.358
5	0 16 27.68	2.1337	2 35 35.2	17.367
6	0 18 35.81	2.1373	2 52 57.5	17.374
7	0 20 44.16	2.1410	3 10 20.1	17.378
8	0 22 52.73	2.1447	3 27 42.9	17.381
9	0 25 1.53	2.1487	3 45 5.8	17.382
10	0 27 10.57	2.1527	4 2 28.8	17.383
11	0 29 19.85	2.1568	4 19 51.7	17.382
12	0 31 29.39	2.1610	4 37 14.5	17.380
13	0 33 29.18	2.1652	4 54 37.1	17.374
14	0 35 49.22	2.1696	5 11 59.2	17.363
15	0 37 59.52	2.1740	5 29 20.7	17.352
16	0 40 10.10	2.1786	5 46 41.5	17.341
17	0 42 20.95	2.1832	6 4 1.6	17.327
18	0 44 32.08	2.1879	6 21 20.7	17.312
19	0 46 43.50	2.1927	6 38 38.9	17.296
20	0 48 55.21	2.1977	6 55 56.1	17.277
21	0 51 7.23	2.2029	7 13 12.1	17.256
22	0 53 19.56	2.2081	7 30 26.7	17.231
23	0 55 32.20	2.2133	7 47 39.8	17.205
24	0 57 45.15	2.2185	N. 8 4 51.3	17.176

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 57 45.15	2.2188	N. 8 4 51.3	17.176
1	0 59 58.42	2.2238	8 22 1.2	17.147
2	1 2 12.01	2.2292	8 39 9.2	17.117
3	1 4 25.92	2.2346	8 56 15.3	17.085
4	1 6 40.16	2.2401	9 13 19.4	17.049
5	1 8 54.73	2.2457	9 30 21.2	17.011
6	1 11 9.64	2.2514	9 47 20.7	16.968
7	1 13 24.90	2.2573	10 4 17.7	16.926
8	1 15 40.52	2.2633	10 21 12.1	16.883
9	1 17 56.50	2.2694	10 38 3.8	16.838
10	1 20 12.85	2.2756	10 54 52.7	16.790
11	1 22 29.57	2.2818	11 11 38.6	16.739
12	1 24 46.67	2.2882	11 28 21.4	16.686
13	1 27 4.15	2.2945	11 45 0.9	16.630
14	1 29 22.01	2.3008	12 1 37.0	16.572
15	1 31 40.25	2.3072	12 18 9.5	16.513
16	1 33 58.88	2.3137	12 34 38.4	16.450
17	1 36 17.90	2.3203	12 51 3.5	16.386
18	1 38 37.32	2.3270	13 7 24.7	16.318
19	1 40 57.14	2.3338	13 23 41.8	16.249
20	1 43 17.38	2.3407	13 39 54.6	16.177
21	1 45 38.03	2.3476	13 56 3.0	16.102
22	1 47 59.09	2.3544	14 12 6.9	16.027
23	1 50 20.56	2.3612	N.14 28 6.2	15.949

SUNDAY, NOV. 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 52 42.44	2.3682	N.14 44 0.8	15.871

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, . .	3	3	8.8
☾ Last Quarter, . .	9	17	54.3
● New Moon, . .	17	9	38.5
☽ First Quarter, .	25	14	5.2

	Day.	h.
☾ Perigee, ...	4	20
☾ Apogee, ...	20	13

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	91 48 33	2323	93 33 59	2307	95 19 49	2290	97 6 3	2275
	a Aquilæ	W.	49 6 8	3960	50 18 27	3860	51 32 27	3769	52 48 1	3685
	a Arietis	E.	56 53 15	2365	55 8 50	2352	53 24 6	2337	51 39 1	2325
	Jupiter	E.	65 4 22	2318	63 18 49	2303	61 32 54	2288	59 46 37	2273
	Aldebaran	E.	87 56 51	2396	86 13 10	2380	84 29 7	2364	82 44 40	2350
2	*a* Aquilæ	W.	59 26 28	3348	60 49 44	3296	62 14 0	3247	63 39 14	3202
	Fomalhaut	W.	29 56 0	3313	31 19 56	3190	32 46 17	3083	34 14 47	2991
	a Arietis	E.	42 49 12	2270	41 2 29	2263	39 15 35	2256	37 28 30	2251
	Jupiter	E.	50 50 3	2206	49 1 48	2196	47 13 17	2187	45 24 30	2178
	Aldebaran	E.	73 57 22	2283	72 10 58	2272	70 24 18	2262	68 37 22	2253
	Saturn	E.	123 8 44	2243	121 21 21	2231	119 33 40	2218	117 45 39	2205
3	*a* Aquilæ	W.	70 57 35	3024	72 27 18	2998	73 57 33	2973	75 28 20	2952
	Fomalhaut	W.	42 2 12	2668	43 39 35	2626	45 17 56	2585	46 57 12	2550
	Jupiter	E.	36 17 27	2145	34 27 36	2141	32 37 40	2140	30 47 42	2141
	Aldebaran	E.	59 39 34	2216	57 51 31	2212	56 3 22	2210	54 15 9	2208
	Pollux	E.	102 37 12	2119	100 46 42	2111	98 55 59	2102	97 5 3	2096
	Saturn	E.	108 41 8	2152	106 51 28	2143	105 1 35	2135	103 11 29	2127
4	Fomalhaut	W.	55 24 12	2422	57 7 16	2404	58 50 45	2388	60 34 37	2375
	a Pegasi	W.	35 22 37	2942	36 54 3	2867	38 27 4	2801	40 1 31	2743
	Aldebaran	E.	45 14 0	2219	43 26 1	2227	41 38 13	2237	39 50 40	2250
	Pollux	E.	87 48 12	2070	85 56 27	2067	84 4 37	2064	82 12 43	2064
	Saturn	E.	93 58 31	2100	92 7 32	2098	90 16 29	2096	88 25 23	2094
5	Fomalhaut	W.	69 17 56	2833	71 3 8	2828	72 48 26	2826	74 33 47	2826
	a Pegasi	W.	48 9 48	2553	49 49 48	2528	51 30 22	2507	53 11 26	2491
	Pollux	E.	72 52 56	2064	71 1 1	2066	69 9 10	2069	67 17 23	2073
	Saturn	E.	79 9 28	2095	77 18 21	2097	75 27 17	2099	73 36 17	2103
	Mars	E.	116 17 50	2245	114 30 30	2247	112 43 12	2250	110 55 59	2253
	Venus	E.	119 27 49	2425	117 44 50	2427	116 1 54	2431	114 19 3	2434
6	Fomalhaut	W.	83 20 26	2836	85 5 33	2841	86 50 33	2848	88 35 23	2855
	a Pegasi	W.	61 41 38	2438	63 24 18	2434	65 7 4	2431	66 49 54	2430
	Pollux	E.	58 0 8	2098	56 9 6	2105	54 18 14	2113	52 27 34	2121
	Saturn	E.	64 22 59	2130	62 32 46	2137	60 42 44	2145	58 52 54	2153
	Mars	E.	102 1 29	2280	100 15 0	2287	98 28 41	2296	96 42 33	2302
	Venus	E.	105 46 21	2461	104 4 13	2469	102 22 16	2477	100 40 30	2485
	Sun	E.	139 58 47	2396	138 15 6	2403	136 31 36	2411	134 48 17	2419
7	*a* Arietis	W.	32 10 51	2262	33 57 47	2263	35 44 41	2265	37 31 32	2269
	Jupiter	W.	24 19 48	2233	26 7 26	2231	27 55 8	2231	29 42 50	2233
	Pollux	E.	43 17 28	2167	41 28 10	2176	39 39 7	2186	37 50 21	2196
	Saturn	E.	49 47 8	2203	47 58 45	2215	46 10 40	2227	44 22 52	2239
	Regulus	E.	80 5 16	2164	78 15 54	2174	76 26 48	2185	74 37 58	2194
	Mars	E.	87 55 0	2348	86 10 11	2359	84 25 37	2370	82 41 19	2381
	Venus	E.	92 14 48	2533	90 34 21	2545	88 54 10	2556	87 14 14	2568
	Sun	E.	126 14 46	2466	124 32 45	2477	122 51 0	2488	121 9 30	2499
8	*a* Arietis	W.	46 23 43	2304	48 9 36	2313	49 55 16	2323	51 40 42	2333
	Jupiter	W.	38 39 47	2264	40 26 40	2272	42 13 21	2281	43 59 48	2291
	Regulus	E.	65 37 53	2258	63 50 44	2266	62 3 54	2278	60 17 22	2291
	Mars	E.	74 3 56	2441	72 21 19	2453	70 39 0	2466	68 56 59	2479
	Venus	E.	78 58 45	2631	77 20 32	2644	75 42 37	2657	74 5 0	2671

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	98 52 39	2260	100 39 37	2245	102 26 57	2231	104 14 38	2217
	α Aquilæ	W.	54 5 4	3607	55 23 31	3534	56 43 18	3467	58 4 19	3407
	α Arietis	E.	49 53 37	2312	48 7 55	2300	46 21 56	2289	44 35 41	2280
	Jupiter	E.	57 59 58	2260	56 12 59	2246	54 25 40	2233	52 38 1	2220
	Aldebaran	E.	80 59 53	2335	79 14 45	2321	77 29 16	2308	75 43 28	2296
2	α Aquilæ	W.	65 5 21	3159	66 32 19	3122	68 0 2	3086	69 28 29	3054
	Fomalhaut	W.	35 45 11	2909	37 17 18	2838	38 50 56	2775	40 25 56	2719
	α Arietis	E.	35 41 19	2247	33 54 2	2245	32 6 42	2247	30 19 25	2250
	Jupiter	E.	43 35 29	2169	41 46 15	2161	39 56 49	2154	38 7 12	2149
	Aldebaran	E.	66 50 13	2243	65 2 50	2235	63 15 14	2229	61 27 29	2222
	Saturn	E.	115 57 19	2192	114 8 40	2183	112 19 45	2171	110 30 34	2161
3	α Aquilæ	W.	76 59 33	2932	78 31 11	2916	80 3 10	2901	81 35 28	2886
	Fomalhaut	W.	48 37 16	2517	50 18 5	2489	51 59 33	2464	53 41 37	2442
	Jupiter	E.	28 57 45	2144	27 7 53	2149	25 18 9	2158	23 28 38	2169
	Aldebaran	E.	52 26 53	2206	50 38 35	2207	48 50 18	2210	47 2 6	2214
	Pollux	E.	95 13 57	2090	93 22 42	2085	91 31 19	2080	89 39 49	2075
	Saturn	E.	101 21 11	2120	99 30 43	2115	97 40 7	2110	95 49 23	2105
4	Fomalhaut	W.	62 18 48	2363	64 3 16	2353	65 47 58	2345	67 32 52	2338
	α Pegasi	W.	41 37 14	2698	43 14 3	2651	44 51 49	2612	46 30 27	2581
	Aldebaran	E.	38 3 27	2261	36 16 35	2283	34 30 11	2306	32 44 20	2333
	Pollux	E.	80 20 48	2062	78 28 50	2061	76 36 51	2062	74 44 53	2062
	Saturn	E.	86 34 14	2092	84 43 2	2092	82 51 50	2092	81 0 38	2093
5	Fomalhaut	W.	76 19 9	2325	78 4 32	2326	79 49 54	2328	81 35 12	2331
	α Pegasi	W.	54 52 52	2475	56 34 41	2462	58 16 47	2453	59 59 7	2445
	Pollux	E.	65 25 42	2077	63 34 7	2081	61 42 38	2086	59 51 18	2093
	Saturn	E.	71 45 23	2107	69 54 35	2112	68 3 54	2118	66 13 22	2124
	Mars	E.	109 8 51	2258	107 21 49	2262	105 34 54	2268	103 48 7	2274
	Venus	E.	112 36 17	2438	110 53 37	2443	109 11 4	2448	107 28 38	2455
6	Fomalhaut	W.	90 20 3	2363	92 4 31	2372	93 48 46	2382	95 32 47	2392
	α Pegasi	W.	68 32 46	2431	70 15 37	2432	71 58 26	2435	73 41 11	2438
	Pollux	E.	50 37 7	2129	48 46 52	2137	46 56 49	2147	45 7 1	2157
	Saturn	E.	57 3 16	2163	55 13 52	2172	53 24 42	2182	51 35 47	2192
	Mars	E.	94 56 36	2311	93 10 52	2319	91 25 20	2329	89 40 3	2339
	Venus	E.	98 58 56	2493	97 17 33	2503	95 36 24	2513	93 55 29	2523
	Sun	E.	133 5 9	2427	131 22 13	2436	129 39 30	2446	127 57 1	2456
7	α Arietis	W.	39 18 16	2274	41 4 53	2281	42 51 21	2288	44 37 38	2296
	Jupiter	W.	31 30 28	2237	33 18 1	2242	35 5 26	2248	36 52 42	2256
	Pollux	E.	36 1 51	2212	34 13 39	2222	32 25 44	2235	30 38 8	2247
	Saturn	E.	42 35 22	2252	40 48 12	2266	39 1 22	2281	37 14 54	2296
	Regulus	E.	72 49 22	2206	71 1 4	2218	69 13 3	2229	67 25 19	2241
	Mars	E.	80 57 17	2392	79 13 31	2404	77 30 2	2416	75 46 50	2429
	Venus	E.	85 34 35	2580	83 55 12	2592	82 16 6	2604	80 37 17	2617
	Sun	E.	119 28 16	2511	117 47 18	2523	116 6 37	2535	114 26 13	2548
8	α Arietis	W	53 25 53	2344	55 10 49	2355	56 55 29	2366	58 39 53	2377
	Jupiter	W.	45 46 0	2302	47 31 57	2313	49 17 38	2323	51 3 4	2334
	Regulus	E.	58 31 9	2303	56 45 14	2316	54 59 38	2329	53 14 21	2342
	Mars	E.	67 15 16	2492	65 33 52	2505	63 52 46	2519	62 11 59	2533
	Venus	E.	72 27 41	2684	70 50 40	2698	69 13 58	2713	67 37 35	2727

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Sun	E.	112 46 7	2561	111 6 19	2574	109 26 49	2588	107 47 37	2601
9	α Arietis	W.	60 24 1	2389	62 7 52	2401	63 51 26	2412	65 34 44	2424
	Jupiter	W.	52 48 14	2345	54 33 8	2357	56 17 45	2368	58 2 5	2380
	Aldebaran	W.	30 34 4	2631	32 12 17	2618	33 50 48	2608	35 29 32	2603
	Regulus	E.	51 29 23	2355	49 44 43	2368	48 0 23	2382	46 16 22	2396
	Mars	E.	60 31 31	2545	58 51 21	2559	57 11 29	2572	55 31 56	2586
	Venus	E.	66 1 31	2741	64 25 45	2755	62 50 18	2769	61 15 10	2784
	Sun	E.	99 36 17	2670	97 58 57	2684	96 21 56	2698	94 45 13	2712
10	α Arietis	W.	74 6 54	2485	75 48 29	2497	77 29 47	2510	79 10 47	2522
	Jupiter	W.	66 39 28	2440	68 22 6	2452	70 4 27	2464	71 46 31	2476
	Aldebaran	W.	43 44 10	2603	45 23 1	2607	47 1 46	2612	48 40 24	2618
	Regulus	E.	37 41 0	2461	35 58 52	2475	34 17 3	2488	32 35 33	2503
	Mars	E.	47 18 50	2653	45 41 7	2666	44 3 42	2680	42 26 35	2692
	Venus	E.	53 24 7	2854	51 50 49	2869	50 17 50	2882	48 45 8	2896
	Sun	E.	86 46 19	2782	85 11 27	2795	83 36 53	2809	82 2 37	2822
11	α Arietis	W.	87 31 39	2582	89 10 59	2594	90 50 2	2605	92 28 50	2617
	Jupiter	W.	80 12 42	2535	81 53 7	2546	83 33 16	2557	85 13 10	2569
	Aldebaran	W.	56 51 23	2654	58 29 5	2663	60 6 35	2671	61 43 54	2680
	Mars	E.	34 25 18	2757	32 49 54	2769	31 14 46	2782	29 39 55	2794
	Venus	E.	41 6 2	2963	39 35 3	2976	38 4 20	2989	36 33 54	3002
	Sun	E.	74 15 38	2889	72 43 5	2902	71 10 49	2915	69 38 49	2927
12	Jupiter	W.	93 28 45	2625	95 7 6	2635	96 45 13	2646	98 23 6	2655
	Aldebaran	W.	69 47 30	2725	71 23 36	2735	72 59 30	2744	74 35 13	2753
	Pollux	W.	25 58 9	2656	27 35 48	2664	29 13 16	2674	30 50 31	2684
	Venus	E.	29 5 44	3065	27 36 52	3078	26 8 15	3089	24 39 52	3101
	Sun	E.	62 2 47	2989	60 32 20	3001	59 2 8	3013	57 32 11	3025
13	Jupiter	W.	106 29 6	2706	108 5 38	2716	109 41 56	2726	111 18 2	2735
	Aldebaran	W.	82 30 39	2798	84 5 9	2808	85 39 27	2817	87 13 33	2825
	Pollux	W.	38 53 32	2732	40 29 30	2741	42 5 16	2750	43 40 50	2758
	Saturn	W.	32 26 46	2788	34 1 30	2794	35 36 6	2801	37 10 13	2807
	Sun	E.	50 5 57	3080	48 37 23	3091	47 9 2	3101	45 40 54	3112
14	Aldebaran	W.	95 1 7	2872	96 34 3	2879	98 6 49	2889	99 39 22	2898
	Pollux	W.	51 35 48	2801	53 10 14	2810	54 44 29	2818	56 18 33	2826
	Saturn	W.	45 0 41	2842	46 34 15	2848	48 7 41	2855	49 40 56	2862
	Sun	E.	38 23 21	3163	36 56 27	3173	35 29 46	3183	34 3 16	3192
20	Sun	W.	28 42 45	3473	30 3 39	3474	31 24 32	3475	32 45 24	3475
	α Aquilæ	E.	70 11 17	4009	68 59 46	4029	67 48 35	4050	66 37 45	4074
	Fomalhaut	E.	94 21 6	3317	92 57 14	3318	91 33 23	3318	90 9 32	3319
	α Pegasi	E.	116 1 23	3404	114 39 11	3399	113 16 53	3393	111 54 29	3387
21	Sun	W.	39 29 38	3476	40 50 29	3475	42 11 21	3475	43 32 13	3473
	α Aquilæ	E.	60 49 50	4217	59 41 40	4252	58 34 3	4289	57 27 0	4329
	Fomalhaut	E.	83 10 48	3328	81 47 9	3329	80 23 31	3332	78 59 56	3333
	α Pegasi	E.	105 1 8	3366	103 38 13	3364	102 15 15	3359	100 52 12	3355
22	Sun	W.	50 17 7	3462	51 38 14	3459	52 59 25	3454	54 20 41	3449
	α Aquilæ	E.	52 1 48	4580	50 59 6	4640	49 57 16	4710	48 56 25	4780
	Fomalhaut	E.	72 2 27	3342	70 39 4	3344	69 15 43	3345	67 52 24	3347

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Sun	E.	106 8 44	2615	104 30 9	2629	102 51 53	2643	101 13 56	2656
9	α Arietis	W.	67 17 44	2436	69 0 28	2448	70 42 55	2461	72 25 3	2473
	Jupiter	W.	59 46 8	2392	61 29 54	2405	63 13 22	2416	64 56 34	2429
	Aldebaran	W.	37 8 23	2599	38 47 20	2598	40 26 18	2599	42 5 15	2600
	Regulus	E.	44 32 40	2408	42 49 16	2422	41 6 12	2434	39 23 26	2448
	Mars	E.	53 52 42	2599	52 13 46	2613	50 35 9	2626	48 56 50	2640
	Venus	E.	59 40 21	2797	58 5 49	2812	56 31 37	2826	54 57 42	2840
	Sun	E.	93 8 49	2726	91 32 44	2741	89 56 58	2753	88 21 29	2768
10	α Arietis	W.	80 51 30	2534	82 31 56	2546	84 12 5	2558	85 51 58	2569
	Jupiter	W.	73 28 18	2488	75 9 48	2499	76 51 3	2511	78 32 1	2523
	Aldebaran	W.	50 18 55	2624	51 57 17	2632	53 35 29	2639	55 13 31	2646
	Regulus	E.	30 54 24	2515	29 13 32	2529	27 32 59	2543	25 52 45	2556
	Mars	E.	40 49 45	2706	39 13 13	2719	37 36 58	2732	36 1 0	2744
	Venus	E.	47 12 44	2910	45 40 38	2924	44 8 49	2937	42 37 17	2950
	Sun	E.	80 28 38	2836	78 54 57	2849	77 21 33	2863	75 48 27	2876
11	α Arietis	W.	94 7 22	2628	95 45 39	2640	97 23 40	2652	99 1 24	2663
	Jupiter	W.	86 52 48	2580	88 32 11	2592	90 11 17	2603	91 50 8	2613
	Aldebaran	W.	63 21 1	2689	64 57 56	2698	66 34 39	2706	68 11 11	2716
	Mars	E.	28 5 18	2806	26 30 58	2818	24 56 54	2830	23 23 4	2842
	Venus	E.	35 3 44	3016	33 33 51	3028	32 4 13	3041	30 34 51	3053
	Sun	E.	68 7 5	2940	66 35 37	2953	65 4 25	2965	63 33 29	2977
12	Jupiter	W.	100 0 46	2666	101 38 11	2676	103 15 23	2687	104 52 21	2696
	Aldebaran	W.	76 10 43	2763	77 46 0	2772	79 21 5	2781	80 55 58	2790
	Pollux	W.	32 27 33	2698	34 4 22	2708	35 40 58	2713	37 17 21	2722
	Venus	E.	23 11 43	3113	21 43 49	3124	20 16 9	3135	18 48 42	3146
	Sun	E.	56 2 29	3036	54 33 1	3047	53 3 46	3058	51 34 45	3069
13	Jupiter	W.	112 53 56	2745	114 29 37	2754	116 5 5	2764	117 40 20	2774
	Aldebaran	W.	88 47 28	2835	90 21 10	2844	91 54 41	2853	93 28 0	2862
	Pollux	W.	45 16 13	2767	46 51 24	2776	48 26 23	2785	50 1 11	2793
	Saturn	W.	38 44 52	2814	40 19 2	2820	41 53 4	2827	43 26 57	2833
	Sun	E.	44 12 59	3122	42 45 16	3133	41 17 46	3142	39 50 27	3153
14	Aldebaran	W.	101 11 44	2907	102 43 54	2915	104 15 54	2924	105 47 42	2935
	Pollux	W.	57 52 27	2835	59 26 10	2844	60 59 44	2849	62 33 9	2856
	Saturn	W.	51 14 3	2869	52 47 2	2876	54 19 51	2884	55 52 30	2892
	Sun	E.	32 36 57	3208	31 10 51	3218	29 44 57	3221	28 19 13	3230
20	Sun	W.	34 6 16	3477	35 27 6	3476	36 47 57	3477	38 8 47	3476
	α Aquilæ	E.	65 27 18	4100	64 17 16	4127	63 7 40	4155	61 58 31	4184
	Fomalhaut	E.	88 45 43	3322	87 21 57	3323	85 58 12	3325	84 34 29	3326
	α Pegasi	E.	110 31 58	3384	109 9 23	3379	107 46 43	3375	106 23 58	3371
21	Sun	W.	44 53 8	3471	46 14 4	3470	47 35 2	3467	48 56 3	3464
	α Aquilæ	E.	56 20 34	4372	55 14 47	4418	54 9 42	4468	53 5 22	4520
	Fomalhaut	E.	77 36 22	3334	76 12 50	3337	74 49 21	3338	73 25 53	3339
	α Pegasi	E.	99 29 4	3352	98 5 53	3349	96 42 38	3345	95 19 19	3341
22	Sun	W.	55 42 2	3446	57 3 27	3440	58 24 58	3435	59 46 37	3428
	α Aquilæ	E.	47 56 34	4865	46 57 51	4951	46 0 17	5050	45 3 59	5159
	Fomalhaut	E.	66 29 7	3351	65 5 54	3352	63 42 43	3356	62 19 36	3356

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
22	*a* Pegasi	E.	93 55 55	3338	92 32 27	3334	91 8 55	3331	89 45 19	3326
23	Sun	W.	61 8 20	3423	62 30 11	3415	63 52 10	3408	65 14 17	3400
	Antares	W.	23 12 32	3038	24 41 58	3032	26 11 31	3025	27 41 13	3018
	Fomalhaut	E.	60 56 32	3362	59 33 32	3366	58 10 37	3370	56 47 46	3375
	a Pegasi	E.	82 46 11	3307	81 22 8	3304	79 58 1	3299	78 33 48	3296
24	Sun	W.	72 7 15	3356	73 30 23	3345	74 53 42	3334	76 17 14	3323
	Antares	W.	35 12 3	2976	36 42 46	2967	38 13 40	2957	39 44 47	2946
	Fomalhaut	E.	49 55 18	3415	48 33 18	3425	47 11 30	3438	45 49 57	3454
	a Pegasi	E.	71 31 33	3275	70 6 52	3270	68 42 6	3267	67 17 16	3264
	Jupiter	E.	118 52 16	2951	117 21 2	2942	115 49 36	2931	114 17 56	2920
25	Sun	W.	83 18 22	3259	84 43 21	3245	86 8 37	3231	87 34 10	3216
	Antares	W.	47 23 50	2887	48 56 25	2874	50 29 17	2862	52 2 25	2848
	Fomalhaut	E.	39 7 24	3573	37 48 20	3610	36 29 56	3653	35 12 19	3703
	a Pegasi	E.	60 12 13	3252	58 47 5	3250	57 21 55	3250	55 56 45	3251
	a Arietis	E.	100 57 40	2918	99 25 44	2904	97 53 30	2891	96 21 0	2877
	Jupiter	E.	106 36 1	2860	105 2 51	2846	103 29 23	2833	101 55 38	2820
26	Sun	W.	94 46 28	3135	96 13 55	3118	97 41 43	3101	99 9 52	3083
	Antares	W.	59 52 44	2773	61 27 47	2756	63 3 12	2741	64 38 58	2724
	a Pegasi	E.	48 51 39	3276	47 26 58	3285	46 2 29	3298	44 38 15	3314
	a Arietis	E.	88 33 50	2802	86 59 25	2786	85 24 39	2772	83 49 32	2754
	Jupiter	E.	94 2 14	2744	92 26 33	2729	90 50 31	2713	89 14 8	2697
27	Sun	W.	106 36 12	2989	108 6 39	2969	109 37 30	2950	111 8 45	2930
	Antares	W.	72 43 27	2637	74 21 32	2618	76 0 2	2600	77 38 57	2581
	a Arietis	E.	75 48 25	2668	74 11 2	2651	72 33 16	2633	70 55 6	2614
	Jupiter	E.	81 6 34	2610	79 27 52	2591	77 48 45	2574	76 9 15	2556
	Aldebaran	E.	106 43 42	2714	105 7 21	2695	103 30 34	2675	101 53 21	2656
28	Sun	W.	118 51 26	2829	120 25 16	2809	121 59 32	2788	123 34 15	2768
	Antares	W.	86 0 0	2487	87 41 32	2467	89 23 31	2448	91 5 58	2429
	a Arietis	E.	62 38 1	2523	60 57 22	2504	59 16 18	2489	57 34 49	2471
	Jupiter	E.	67 45 19	2463	66 3 14	2445	64 20 44	2426	62 37 46	2408
	Aldebaran	E.	93 40 39	2559	92 0 47	2539	90 20 28	2520	88 39 42	2500
29	Sun	W.	131 34 29	2669	133 11 51	2650	134 49 38	2631	136 27 51	2612
	a Aquilæ	W.	54 40 39	3643	55 58 27	3571	57 17 33	3502	58 37 55	3439
	a Arietis	E.	49 1 14	2887	47 17 20	2871	45 33 3	2856	43 48 25	2843
	Jupiter	E.	53 56 27	2318	52 10 54	2301	50 24 56	2284	48 38 33	2268
	Aldebaran	E.	80 9 14	2408	78 25 50	2390	76 42 1	2373	74 57 47	2355
30	*a* Aquilæ	W.	65 36 16	3178	67 2 52	3134	68 30 20	3096	69 58 35	3058
	Fomalhaut	W.	36 21 7	2928	37 52 50	2855	39 26 7	2788	41 0 51	2729
	Jupiter	E.	39 40 47	2194	37 52 10	2181	36 3 14	2170	34 14 1	2161
	Aldebaran	E.	66 10 41	2279	64 24 10	2265	62 37 19	2251	60 50 8	2241
	Saturn	E.	116 28 5	2212	114 39 56	2196	112 51 23	2180	111 2 25	2165
31	*a* Aquilæ	W.	77 30 17	2909	79 2 24	2886	80 34 59	2867	82 8 0	2849
	Fomalhaut	W.	49 12 9	2502	50 53 19	2468	52 35 17	2436	54 18 0	2409
	Jupiter	E.	25 4 54	2137	23 14 53	2143	21 24 59	2151	19 35 17	2170
	Aldebaran	E.	51 50 19	2194	50 1 43	2190	48 13 0	2186	46 24 12	2184
	Saturn	E.	101 51 54	2094	100 0 45	2081	98 9 16	2070	96 17 30	2059

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight. ° ′ ″	P. L. of Diff.	XVh. ° ′ ″	P. L. of Diff.	XVIIIh. ° ′ ″	P. L. of Diff.	XXIh. ° ′ ″	P. L. of Diff.
22	a Pegasi	E.	88 21 38	3323	86 57 53	3319	85 34 4	3315	84 10 10	3311
23	Sun	W.	66 36 33	3393	67 58 58	3384	69 21 33	3374	70 44 19	3365
	Antares	W.	29 11 3	3011	30 41 2	3003	32 11 11	2994	33 41 31	2986
	Fomalhaut	E.	55 25 1	3381	54 2 23	3387	52 39 52	3395	51 17 30	3404
	a Pegasi	E.	77 9 31	3291	75 45 9	3287	74 20 42	3282	72 56 10	3278
24	Sun	W.	77 40 59	3311	79 4 58	3299	80 29 11	3286	81 53 39	3273
	Antares	W.	41 16 7	2935	42 47 41	2924	44 19 29	2912	45 51 32	2901
	Fomalhaut	E.	44 28 41	3471	43 7 44	3491	41 47 10	3515	40 27 2	3542
	a Pegasi	E.	65 52 22	3260	64 27 24	3258	63 2 23	3255	61 37 19	3253
	Jupiter	E.	112 46 3	2909	111 13 55	2897	109 41 32	2885	108 8 54	2873
25	Sun	W.	89 0 0	3201	90 26 8	3185	91 52 35	3168	93 19 22	3153
	Antares	W.	53 35 51	2834	55 9 35	2818	56 43 39	2804	58 18 2	2789
	Fomalhaut	E.	33 55 35	3761	32 39 52	3829	31 25 20	3912	30 12 12	4012
	a Pegasi	E.	54 31 36	3253	53 6 30	3256	51 41 27	3260	50 16 29	3267
	a Arietis	E.	94 48 12	2862	93 15 5	2848	91 41 40	2833	90 7 55	2818
	Jupiter	E.	100 21 36	2805	98 47 14	2791	97 12 34	2775	95 37 34	2760
26	Sun	W.	100 38 22	3065	102 7 15	3046	103 36 31	3027	105 6 10	3009
	Antares	W.	66 15 6	2707	67 51 36	2690	69 28 29	2672	71 5 46	2655
	a Pegasi	E.	43 14 20	3333	41 50 47	3358	40 27 42	3385	39 5 8	3416
	a Arietis	E.	82 14 4	2737	80 38 13	2720	79 2 0	2703	77 25 24	2686
	Jupiter	E.	87 37 24	2679	86 0 16	2663	84 22 46	2645	82 44 52	2627
27	Sun	W.	112 40 26	2910	114 12 32	2890	115 45 4	2869	117 18 2	2849
	Antares	W.	79 18 18	2563	80 58 4	2544	82 38 16	2525	84 18 55	2506
	a Arietis	E.	69 16 30	2596	67 37 30	2579	65 58 6	2561	64 18 17	2541
	Jupiter	E.	74 29 19	2538	72 48 58	2519	71 8 11	2500	69 26 58	2482
	Aldebaran	E.	100 15 41	2637	98 37 36	2617	96 59 4	2595	95 20 5	2577
28	Sun	W.	125 9 25	2748	126 45 1	2728	128 21 4	2708	129 57 33	2688
	Antares	W.	92 48 52	2410	94 32 13	2391	96 16 1	2371	98 0 18	2351
	a Arietis	E.	55 52 55	2453	54 10 36	2436	52 27 52	2419	50 44 45	2403
	Jupiter	E.	60 54 22	2390	59 10 33	2371	57 26 17	2354	55 41 36	2335
	Aldebaran	E.	86 58 29	2482	85 16 50	2463	83 34 44	2444	81 52 12	2426
29	Sun	W.	138 6 30	2594	139 45 33	2577	141 25 0	2560	143 4 50	2543
	a Aquilæ	W.	59 59 27	3379	61 22 7	3325	62 45 50	3272	64 10 34	3223
	a Arietis	E.	42 3 28	2329	40 18 11	2317	38 32 36	2305	36 46 44	2294
	Jupiter	E.	46 51 46	2251	45 4 35	2237	43 17 2	2220	41 29 5	2206
	Aldebaran	E.	73 13 8	2339	71 28 6	2323	69 42 40	2308	67 56 52	2292
30	a Aquilæ	W.	71 27 36	3023	72 57 20	2992	74 27 43	2962	75 58 43	2935
	Fomalhaut	W.	42 36 53	2675	44 14 7	2624	45 52 29	2580	47 31 51	2540
	Jupiter	E.	32 24 34	2161	30 34 52	2144	28 45 0	2138	26 54 59	2137
	Aldebaran	E.	59 2 41	2229	57 14 56	2218	55 26 56	2210	53 38 43	2202
	Saturn	E.	109 13 4	2149	107 23 18	2134	105 33 12	2120	103 42 43	2107
31	a Aquilæ	W.	83 41 24	2832	85 15 10	2819	86 49 13	2807	88 23 32	2798
	Fomalhaut	W.	56 1 22	2883	57 45 21	2859	59 29 55	2838	61 14 59	2818
	Jupiter	E.	17 46 4	2198	15 57 34	2243	14 10 11	2313	12 24 30	2428
	Aldebaran	E.	44 35 20	2163	42 46 27	2185	40 57 37	2189	39 8 53	2196
	Saturn	E.	94 25 28	2048	92 33 9	2039	90 40 36	2030	88 47 49	2023

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from Apparent Time.*	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.	Semi-diameter.			
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Sun.	1	14 26 33.26	9.804	S.14 31 11.0	47.98	16 10.02	66.98	16 16.87	0.052
Mon.	2	14 30 28.97	9.838	14 50 15.6	47.38	16 10.26	67.09	16 17.72	0.018
Tues.	3	14 34 25.49	9.872	15 9 5.8	46.77	16 10.50	67.21	16 17.75	0.016
Wed.	4	14 38 22.84	9.907	15 27 41.2	46.15	16 10.74	67.33	16 16.96	0.050
Thur.	5	14 42 21.01	9.941	15 46 1.3	45.51	16 10.98	67.45	16 15.35	0.085
Fri.	6	14 46 20.02	9.976	16 4 5.8	44.85	16 11.22	67.57	16 12.90	0.120
Sat.	7	14 50 19.88	10.012	16 21 54.3	44.17	16 11.45	67.68	16 9.60	0.156
Sun.	8	14 54 20.60	10.048	16 39 26.4	43.48	16 11.67	67.80	16 5.45	0.192
Mon.	9	14 58 22.19	10.084	16 56 41.6	42.77	16 11.89	67.92	16 0.43	0.228
Tues.	10	15 2 24.66	10.121	17 13 39.7	42.04	16 12.11	68.04	15 54.53	0.264
Wed.	11	15 6 28.00	10.157	17 30 20.2	41.30	16 12.33	68.16	15 47.77	0.300
Thur.	12	15 10 32.20	10.193	17 46 42.6	40.54	16 12.54	68.27	15 40.15	0.336
Fri.	13	15 14 37.28	10.229	18 2 46.6	39.76	16 12.75	68.39	15 31.66	0.372
Sat.	14	15 18 43.23	10.265	18 18 31.6	38.96	16 12.96	68.51	15 22.30	0.408
Sun.	15	15 22 50.04	10.300	18 33 57.3	38.15	16 13.17	68.63	15 12.06	0.444
Mon.	16	15 26 57.70	10.335	18 49 3.4	37.32	16 13.37	68.75	15 0.98	0.479
Tues.	17	15 31 6.21	10.370	19 3 49.3	36.47	16 13.57	68.87	14 49.06	0.514
Wed.	18	15 35 15.54	10.405	19 18 14.6	35.60	16 13.77	68.99	14 36.32	0.548
Thur.	19	15 39 25.68	10.439	19 32 18.9	34.72	16 13.97	69.10	14 22.77	0.582
Fri.	20	15 43 36.64	10.472	19 46 2.0	33.83	16 14.17	69.21	14 8.41	0.615
Sat.	21	15 47 48.40	10.505	19 59 23.5	32.92	16 14.37	69.32	13 53.26	0.648
Sun.	22	15 52 0.93	10.537	20 12 22.9	31.99	16 14.56	69.43	13 37.33	0.681
Mon.	23	15 56 14.23	10.569	20 24 59.9	31.05	16 14.75	69.54	13 20.63	0.713
Tues.	24	16 0 28.30	10.601	20 37 14.2	30.10	16 14.93	69.65	13 3.17	0.744
Wed.	25	16 4 43.14	10.631	20 49 5.3	29.13	16 15.11	69.76	12 44.94	0.775
Thur.	26	16 8 58.69	10.661	21 0 33.0	28.15	16 15.29	69.86	12 26.00	0.805
Fri.	27	16 13 14.95	10.691	21 11 37.1	27.15	16 15.46	69.96	12 6.35	0.834
Sat.	28	16 17 31.92	10.720	21 22 17.2	26.14	16 15.62	70.06	11 46.00	0.863
Sun.	29	16 21 49.57	10.748	21 32 32.8	25.13	16 15.78	70.15	11 24.96	0.891
Mon.	30	16 26 7.90	10.775	21 42 23.9	24.10	16 15.94	70.24	11 3.26	0.918
Tues.	31	16 30 26.87	10.802	S.21 51 50.2	23.06	16 16.10	70.33	10 40.91	0.945

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, *to be added to Mean Time.*	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	*Apparent* Declination.	Diff. for 1 hour.			
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Sun.	1	14 26 35.92	9.804	S.14 31 24.0	47.98	16 16.89	0.052	14 42 52.81
Mon.	2	14 30 31.64	9.838	14 50 28.5	47.38	16 17.73	0.018	14 46 49.37
Tues.	3	14 34 28.17	9.872	15 9 18.5	46.77	16 17.75	0.016	14 50 45.92
Wed.	4	14 38 25.52	9.907	15 27 53.7	46.15	16 16.96	0.050	14 54 42.48
Thur.	5	14 42 23.70	9.941	15 46 13.6	45.51	16 15.33	0.085	14 58 39.03
Fri.	6	14 46 22.72	9.976	16 4 17.9	44.85	16 12.87	0.120	15 2 35.59
Sat.	7	14 50 22.58	10.012	16 22 6.2	44.17	16 9.56	0.156	15 6 32.14
Sun.	8	14 54 23.30	10.048	16 39 38.1	43.48	16 5.40	0.192	15 10 28.70
Mon.	9	14 58 24.89	10.084	16 56 53.1	42.77	16 0.36	0.228	15 14 25.25
Tues.	10	15 2 27.35	10.121	17 13 50.9	42.04	15 54.46	0.264	15 18 21.81
Wed.	11	15 6 30.68	10.157	17 30 31.1	41.30	15 47.69	0.300	15 22 18.37
Thur.	12	15 10 34.87	10.193	17 46 53.2	40.54	15 40.06	0.336	15 26 14.93
Fri.	13	15 14 39.93	10.229	18 2 56.9	39.76	15 31.56	0.372	15 30 11.49
Sat.	14	15 18 45.86	10.265	18 18 41.6	38.96	15 22.18	0.408	15 34 8.04
Sun.	15	15 22 52.65	10.300	18 34 7.0	38.15	15 11.95	0.444	15 38 4.60
Mon.	16	15 27 0.29	10.335	18 49 12.7	37.32	15 0.86	0.479	15 42 1.15
Tues.	17	15 31 8.77	10.370	19 3 58.3	36.47	14 48.94	0.514	15 45 57.71
Wed.	18	15 35 18.07	10.405	19 18 23.3	35.60	14 36.19	0.548	15 49 54.26
Thur.	19	15 39 28.19	10.439	19 32 27.3	34.72	14 22.63	0.582	15 53 50.82
Fri.	20	15 43 39.11	10.472	19 46 10.0	33.83	14 8.27	0.615	15 57 47.38
Sat.	21	15 47 50.83	10.505	19 59 31.1	32.92	13 53.11	0.648	16 1 43.94
Sun.	22	15 52 3.32	10.537	20 12 30.1	31.99	13 37.18	0.681	16 5 40.50
Mon.	23	15 56 16.58	10.569	20 25 6.7	31.05	13 20.48	0.713	16 9 37.06
Tues.	24	16 0 30.61	10.601	20 37 20.6	30.10	13 3.01	0.744	16 13 33.62
Wed.	25	16 4 45.40	10.631	20 49 11.4	29.13	12 44.78	0.775	16 17 30.18
Thur.	26	16 9 0.90	10.661	21 0 38.8	28.15	12 25.83	0.805	16 21 26.73
Fri.	27	16 13 17.11	10.691	21 11 42.5	27.15	12 6.18	0.834	16 25 23.29
Sat.	28	16 17 34.02	10.720	21 22 22.2	26.14	11 45.83	0.863	16 29 19.85
Sun.	29	16 21 51.62	10.748	21 32 37.5	25.13	11 24.79	0.891	16 33 16.41
Mon.	30	16 26 9.88	10.775	21 42 28.3	24.10	11 3.09	0.918	16 37 12.97
Tues.	31	16 30 28.79	10.802	S.21 51 54.3	23.06	10 40.74	0.945	16 41 9.53

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h. m. s.
1	305	219 2 58.8	2 16.6	150.23	+0.59	9.9963942	46.3	9 15 35.92
2	306	220 3 5.4	2 23.1	150.31	0.68	.9962839	45.6	9 11 40.01
3	307	221 3 13.9	2 31.4	150.39	0.76	.9961753	44.9	9 7 44.10
4	308	222 3 24.3	2 41.7	150.47	0.80	.9960683	44.2	9 3 48.19
5	309	223 3 36.6	2 53.8	150.55	0.82	.9959629	43.6	8 59 52.28
6	310	224 3 50.8	3 7.9	150.63	0.80	.9958591	42.9	8 55 56.37
7	311	225 4 6.9	3 23.9	150.71	0.76	.9957570	42.2	8 52 0.46
8	312	226 4 25.1	3 41.9	150.80	0.68	.9956564	41.6	8 48 4.55
9	313	227 4 45.4	4 2.0	150.89	0.59	.9955571	41.1	8 44 8.64
10	214	228 5 7.7	4 24.1	150.97	0.48	.9954591	40.5	8 40 12.73
11	315	229 5 31.9	4 48.2	151.05	0.35	.9953624	40.0	8 36 16.82
12	316	230 5 58.0	5 14.2	151.13	0.21	.9952669	39.6	8 32 20.91
13	317	231 6 26.0	5 42.0	151.21	+0.10	.9951724	39.1	8 28 25.00
14	318	232 6 55.9	6 11.7	151.28	—0.02	.9950789	38.7	8 24 29.09
15	319	233 7 27.5	6 43.1	151.35	0.13	.9949862	38.3	8 20 33.18
16	320	234 8 0.7	7 16.2	151.42	0.21	.9948944	38.0	8 16 37.26
17	321	235 8 35.4	7 50.7	151.48	0.26	.9948035	37.5	8 12 41.35
18	322	236 9 11.5	8 26.6	151.54	0.28	.9947136	37.2	8 8 45.44
19	323	237 9 49.0	9 3.9	151.59	0.28	.9946247	36.8	8 4 49.53
20	324	238 10 27.8	9 42.5	151.64	0.24	.9945369	36.3	8 0 53.62
21	325	239 11 7.8	10 22.4	151.69	0.18	.9944504	35.7	7 56 57.70
22	326	240 11 48.9	11 3.3	151.74	—0.09	.9943653	35.1	7 53 1.79
23	327	241 12 31.2	11 45.4	151.79	+0.02	.9942817	34.5	7 49 5.88
24	328	242 13 14.6	12 28.6	151.83	0.15	.9941996	33.8	7 45 9.97
25	329	243 13 58.9	13 12.7	151.87	0.28	.9941193	33.1	7 41 14.06
26	330	244 14 44.2	13 57.9	151.91	0.41	.9940408	32.2	7 37 18.14
27	331	245 15 30.5	14 44.0	151.95	0.54	.9939644	31.3	7 33 22.22
28	332	246 16 17.9	15 31.2	151.99	0.66	.9938903	30.4	7 29 26.31
29	333	247 17 6.3	16 19.4	152.03	0.76	.9938184	29.4	7 25 30.40
30	334	248 17 55.7	17 8.6	152.08	0.84	.9937490	28.3	7 21 34.49
31	335	249 18 46.2	17 59.0	152.13	+0.88	9.9936822	27.3	7 17 38.58

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	16 40.9	16 43.4	61 6.8	+0.98	61 16.4	+0.58	11 35.9	2.38	14.6
2	16 44.6	16 44.5	61 20.7	+0.16	61 20.0	−0.25	12 35.5	2.57	15.6
3	16 43.0	16 40.2	61 14.6	−0.65	61 4.6	1.02	13 39.4	2.71	16.6
4	16 36.3	16 31.4	60 50.1	1.36	60 31.9	1.65	14 45.5	2.73	17.6
5	16 25.6	16 19.1	60 10.6	1.87	59 46.9	2.04	15 50.5	2.62	18.6
6	16 12.2	16 5.0	59 21.6	2.16	58 55.2	2.22	16 51.2	2.41	19.6
7	15 57.7	15 50.5	58 28.4	2.23	58 1.7	2.19	17 46.3	2.19	20.6
8	15 43.4	15 36.5	57 35.7	2.13	57 10.5	2.04	18 35.9	1.98	21.6
9	15 30.0	15 23.9	56 46.6	1.93	56 24.1	1.80	19 21.1	1.82	22.6
10	15 18.2	15 13.0	56 3.3	1.66	55 44.1	1.52	20 3.3	1.73	23.6
11	15 8.2	15 3.9	55 26.5	1.39	55 10.7	1.25	20 43.9	1.68	24.6
12	15 0.0	14 56.6	54 56.5	1.12	54 43.8	0.99	21 24.0	1.69	25.6
13	14 53.6	14 51.0	54 32.8	0.85	54 23.3	0.73	22 4.9	1.74	26.6
14	14 48.8	14 47.0	54 15.3	0.61	54 8.7	0.50	22 47.4	1.82	27.6
15	14 45.6	14 44.5	54 3.4	0.39	53 59.4	0.28	23 32.2	1.92	28.6
16	14 43.8	14 43.4	53 56.7	−0.17	53 55.2	−0.07	δ		29.6
17	14 43.3	14 43.6	53 55.0	+0.04	53 56.2	+0.16	0 19.7	2.03	0.8
18	14 44.3	14 45.4	53 58.8	0.27	54 2.7	0.39	1 9.7	2.11	1.8
19	14 46.9	14 48.9	54 8.2	0.53	54 15.4	0.67	2 1.2	2.16	2.8
20	14 51.3	14 54.1	54 24.2	0.81	54 34.8	0.96	2 53.2	2.15	3.8
21	14 57.5	15 1.5	54 47.3	1.11	55 1.8	1.28	3 44.3	2.09	4.8
22	15 6.0	15 11.0	55 18.2	1.45	55 36.5	1.61	4 33.7	2.02	5.8
23	15 16.5	15 22.5	55 56.9	1.77	56 19.1	1.93	5 21.1	1.95	6.8
24	15 29.0	15 36.0	56 43.1	2.07	57 8.7	2.19	6 7.1	1.90	7.8
25	15 43.4	15 51.0	57 35.7	2.29	58 3.6	2.35	6 52.4	1.89	8.8
26	15 58.7	16 6.5	58 32.1	2.37	59 0.5	2.35	7 38.2	1.95	9.8
27	16 14.1	16 21.4	59 28.4	2.27	59 55.1	2.14	8 26.0	2.06	10.8
28	16 28.1	16 34.0	60 19.7	1.93	60 41.6	1.68	9 17.3	2.24	11.8
29	16 39.0	16 42.9	61 0.1	1.37	61 14.5	1.01	10 13.6	2.45	12.8
30	16 45.6	16 46.9	61 24.2	+0.61	61 28.9	+0.18	11 15.5	2.67	13.8
31	16 46.8	16 45.4	61 28.5	−0.25	61 23.0	−0.67	12 21.9	2.79	14.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 1.					TUESDAY 3.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	1 52 42.44	2.3682	N.14 44 0.8	15.871	0	3 54 52.41	2.7121	N.25 7 46.4	9.248
1	1 55 4.75	2.3754	14 59 50.6	15.788	1	3 57 35.31	2.7178	25 16 55.6	9.057
2	1 57 27.49	2.3826	15 15 35.3	15.702	2	4 0 18.55	2.7234	25 25 53.2	8.863
3	1 59 50.66	2.3899	15 31 14.8	15.615	3	4 3 2.13	2.7289	25 34 39.2	8.669
4	2 2 14.26	2.3972	15 46 48 9	15.524	4	4 5 46.03	2.7342	25 43 13.5	8 475
5	2 4 38.31	2.4045	16 2 17.6	15.431	5	4 8 30.24	2.7393	25 51 36.2	8.280
6	2 7 2.80	2.4118	16 17 40.5	15.336	6	4 11 14.75	2.7442	25 59 47.1	8.082
7	2 9 27.73	2.4191	16 32 57.6	15.237	7	4 13 59.55	2.7489	26 7 46.1	7.885
8	2 11 53.10	2.4264	16 48 8.9	15.138	8	4 16 44.62	2.7534	26 15 33.2	7.683
9	2 14 18.90	2.4337	17 3 14.2	15.038	9	4 19 29.96	2.7579	26 23 8.1	7.479
10	2 16 45.15	2.4412	17 18 13.4	14.934	10	4 22 15.57	2.7623	26 30 30.7	7.274
11	2 19 11.85	2.4489	17 33 6.3	14.828	11	4 25 1.44	2.7665	26 37 41.0	7.069
12	2 21 39.01	2.4564	17 47 52.7	14.718	12	4 27 47.55	2.7704	26 44 39.0	6.863
13	2 24 6.62	2.4639	18 2 32.4	14.605	13	4 30 33.89	2.7741	26 51 24.6	6.657
14	2 26 34.68	2.4714	18 17 5.3	14.490	14	4 33 20.44	2.7776	26 57 57.8	6.450
15	2 29 3.19	2.4789	18 31 31.2	14.374	15	4 36 7.20	2.7810	27 4 18.6	6.242
16	2 31 32.15	2.4865	18 45 50.1	14.252	16	4 38 54.16	2.7842	27 10 26.9	6.032
17	2 34 1.57	2.4942	19 0 1.8	14.133	17	4 41 41.31	2.7873	27 16 22.5	5.822
18	2 36 31.46	2.5020	19 14 6.1	14.008	18	4 44 28.64	2.7902	27 22 5.5	5.611
19	2 39 1.81	2.5096	19 28 2.8	13.881	19	4 47 16.14	2.7929	27 27 35.8	5.398
20	2 41 32.61	2.5171	19 41 51.8	13.752	20	4 50 3.79	2.7952	27 32 53.3	5.184
21	2 44 3.86	2.5246	19 55 33.1	13.622	21	4 52 51.57	2.7972	27 37 57.9	4.968
22	2 46 35.56	2.5322	20 9 6.5	13.490	22	4 55 39.46	2.7990	27 42 49.5	4.752
23	2 49 7.73	2.5399	N.20 22 31.9	13.355	23	4 58 27.45	2.8006	N.27 47 28.1	4.535
	MONDAY 2.					WEDNESDAY 4.			
0	2 51 40.35	2.5474	N.20 35 49.1	13.218	0	5 1 15.53	2.8020	N.27 51 53.7	4.319
1	2 54 13.42	2.5549	20 48 58.0	13.077	1	5 4 3.69	2.8034	27 56 6.4	4.104
2	2 56 46.94	2.5624	21 1 58.3	12.932	2	5 6 51.94	2.8047	28 0 6.2	3.889
3	2 59 20.91	2.5699	21 14 49.9	12.788	3	5 9 40.26	2.8058	28 3 53.0	3.672
4	3 1 55.33	2.5773	21 27 32.8	12.640	4	5 12 28.64	2.8067	28 7 26.8	3.454
5	3 4 30.19	2.5847	21 40 6.7	12.490	5	5 15 17.06	2.8072	28 10 47.5	3.235
6	3 7 5.49	2.5920	21 52 31.6	12.339	6	5 18 5.51	2.8076	28 13 55.0	3.016
7	3 9 41.23	2.5993	22 4 47.4	12.186	7	5 20 53.97	2.8075	28 16 49.4	2.796
8	3 12 17.41	2.6067	22 16 53.9	12.029	8	5 23 42.41	2.8071	28 19 30.8	2.582
9	3 14 54.03	2.6140	22 28 50.9	11.871	9	5 26 30.82	2.8063	28 21 59.2	2.365
10	3 17 31.09	2.6211	22 40 38.3	11.709	10	5 29 19.17	2.8054	28 24 14.6	2.148
11	3 20 8.57	2.6282	22 52 16.0	11.547	11	5 32 7.47	2.8045	28 26 17.0	1.930
12	3 22 46.47	2.6352	23 3 43.9	11.382	12	5 34 55.71	2.8035	28 28 6.3	1.712
13	3 25 24.79	2.6422	23 15 1.9	11.216	13	5 37 43 89	2.8023	28 29 42.5	1.494
14	3 28 3.53	2.6492	23 26 9.8	11.048	14	5 40 31.99	2.8009	28 31 5.6	1.277
15	3 30 42.69	2.6561	23 37 7.4	10.874	15	5 43 20.00	2.7992	28 32 15.7	1.060
16	3 33 22.26	2.6627	23 47 54.6	10.699	16	5 46 7.90	2.7971	28 33 12.8	0.843
17	3 36 2.22	2.6691	23 58 31.3	10.524	17	5 48 55.66	2.7946	28 33 56.9	0.627
18	3 38 42.55	2.6754	24 8 57.5	10.347	18	5 51 43.26	2.7921	28 34 28.0	0.410
19	3 41 23.26	2.6817	24 19 13.0	10.163	19	5 54 30.71	2.7896	28 34 46.1	0.194
20	3 44 4.35	2.6880	24 29 17.6	9.987	20	5 57 18.01	2.7869	28 34 51.3	0.019
21	3 46 45.82	2.6942	24 39 11.4	9.805	21	6 0 5.14	2.7838	28 34 43.8	0.231
22	3 49 27.66	2.7003	24 48 54.2	9.621	22	6 2 52.07	2.7802	28 34 23.6	0.441
23	3 52 9.86	2.7062	24 58 25.9	9.435	23	6 5 38.77	2.7764	28 33 50.8	0.654
24	3 54 52.41	2.7121	N.25 7 46.4	9.218	24	6 8 25.24	2.7726	N.28 33 5.2	0.866

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 8 25.24	2.7726	N.28 33 5.2	0.866
1	6 11 11.48	2.7687	28 32 6.9	1.077
2	6 13 57.48	2.7647	28 30 56.0	1.286
3	6 16 43.24	2.7605	28 29 32.6	1.493
4	6 19 28.74	2.7560	28 27 56.8	1.700
5	6 22 13.96	2.7512	28 26 8.6	1.906
6	6 24 58.89	2.7463	28 24 8.1	2.110
7	6 27 43.52	2.7412	28 21 55.4	2.313
8	6 30 27.83	2.7357	28 19 30.5	2.517
9	6 33 11.81	2.7302	28 16 53.4	2.718
10	6 35 55.46	2.7247	28 14 4.3	2.918
11	6 38 38.77	2.7189	28 11 3.2	3.117
12	6 41 21.73	2.7130	28 7 50.2	3.315
13	6 44 4.33	2.7068	28 4 25.5	3.512
14	6 46 46.55	2.7003	28 0 49.1	3.707
15	6 49 28.37	2.6936	27 57 1.0	3.899
16	6 52 9.78	2.6867	27 53 1.3	4.091
17	6 54 50.78	2.6799	27 48 50.3	4.281
18	6 57 31.37	2.6731	27 44 28.0	4.468
19	7 0 11.55	2.6661	27 39 54.5	4.653
20	7 2 51.32	2.6592	27 35 9.8	4.838
21	7 5 30.66	2.6521	27 30 14.0	5.021
22	7 8 9.56	2.6416	27 25 7.3	5.205
23	7 10 48.01	2.6369	N.27 19 49.8	5.382

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 13 25.99	2.6291	N.27 14 21.5	5.560
1	7 16 3.50	2.6213	27 8 42.6	5.736
2	7 18 40.54	2.6134	27 2 53.2	5.910
3	7 21 17.11	2.6054	26 56 53.4	6.082
4	7 23 53.19	2.5972	26 50 43.3	6.253
5	7 26 28.78	2.5891	26 44 23.0	6.421
6	7 29 3.88	2.5808	26 37 52.6	6.589
7	7 31 38.48	2.5725	26 31 12.1	6.755
8	7 34 12.58	2.5641	26 24 21.7	6.919
9	7 36 46.18	2.5556	26 17 21.7	7.080
10	7 39 19.26	2.5470	26 10 12.1	7.239
11	7 41 51.82	2.5384	26 2 53.0	7.397
12	7 44 23.86	2.5298	25 55 24.5	7.552
13	7 46 55.39	2.5211	25 47 46.7	7.707
14	7 49 26.39	2.5122	25 39 59.7	7.858
15	7 51 56.86	2.5033	25 32 3.6	8.010
16	7 54 26.79	2.4943	25 23 58.5	8.158
17	7 56 56.18	2.4853	25 15 44.6	8.304
18	7 59 25.03	2.4763	25 7 22.0	8.448
19	8 1 53.34	2.4673	24 58 50.8	8.591
20	8 4 21.11	2.4584	24 50 11.1	8.732
21	8 6 48.35	2.4495	24 41 23.0	8.872
22	8 9 15.05	2.4405	24 32 26.6	9.006
23	8 11 41.21	2.4315	24 23 22.1	9.142
24	8 14 6.83	2.4225	N.24 14 9.6	9.274

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 14 6.83	2.4225	N.24 14 9.6	9.274
1	8 16 31.91	2.4135	24 4 49.2	9.405
2	8 18 56.45	2.4044	23 55 21.0	9.535
3	8 21 20.44	2.3953	23 45 45.0	9.662
4	8 23 43.89	2.3863	23 36 1.5	9.787
5	8 26 6.80	2.3773	23 26 10.6	9.908
6	8 28 29.17	2.3682	23 16 12.5	10.030
7	8 30 50.99	2.3592	23 6 7.1	10.149
8	8 33 12.27	2.3502	22 55 54.6	10.268
9	8 35 33.01	2.3412	22 45 35.0	10.382
10	8 37 53.21	2.3322	22 35 8.6	10.489
11	8 40 12.87	2.3232	22 24 35.4	10.599
12	8 42 31.99	2.3142	22 13 55.7	10.711
13	8 44 50.56	2.3053	22 3 9.6	10.822
14	8 47 8.61	2.2965	21 52 17.0	10.931
15	8 49 26.14	2.2878	21 41 17.9	11.038
16	8 51 43.15	2.2792	21 30 12.5	11.142
17	8 53 59.64	2.2705	21 19 0.9	11.243
18	8 56 15.61	2.2618	21 7 43.3	11.341
19	8 58 31.06	2.2532	20 56 19.9	11.438
20	9 0 45.99	2.2446	20 44 50.8	11.532
21	9 3 0.41	2.2361	20 33 16.0	11.627
22	9 5 14.32	2.2276	20 21 35.6	11.721
23	9 7 27.72	2.2191	N.20 9 49.8	11.818

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	9 9 40.61	2.2107	N.19 57 58.6	11.902
1	9 11 53.01	2.2026	19 46 2.1	11.967
2	9 14 4.91	2.1945	19 34 0.5	12.068
3	9 16 16.34	2.1863	19 21 53.9	12.152
4	9 18 27.28	2.1782	19 9 42.3	12.236
5	9 20 37.72	2.1701	18 57 25.7	12.317
6	9 22 47.69	2.1621	18 45 4.3	12.396
7	9 24 57.18	2.1542	18 32 38.1	12.474
8	9 27 6.20	2.1465	18 20 7.4	12.549
9	9 29 14.76	2.1388	18 7 32.2	12.622
10	9 31 22.86	2.1311	17 54 52.7	12.693
11	9 33 30.49	2.1234	17 42 9.0	12.763
12	9 35 37.65	2.1158	17 29 21.1	12.832
13	9 37 44.37	2.1083	17 16 29.1	12.901
14	9 39 50.65	2.1011	17 3 33.0	12.969
15	9 41 56.50	2.0939	16 50 32.8	13.036
16	9 44 1.92	2.0867	16 37 28.7	13.099
17	9 46 6.90	2.0794	16 24 20.9	13.161
18	9 48 11.45	2.0723	16 11 9.4	13.222
19	9 50 15.58	2.0654	15 57 54.3	13.282
20	9 52 19.30	2.0586	15 44 35.6	13.339
21	9 54 22.61	2.0518	15 31 13.5	13.395
22	9 56 25.52	2.0451	15 17 48.0	13.450
23	9 58 28.02	2.0382	15 4 19.3	13.504
24	10 0 30.13	2.0319	N.14 50 47.5	13.558

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 0 30.13	2.0319	N.14 50 47.5	13.556
1	10 2 31.86	2.0256	14 37 12.6	13.610
2	10 4 33.20	2.0192	14 23 34.6	13.658
3	10 6 34.16	2.0129	14 9 53.7	13.706
4	10 8 34.74	2.0065	13 56 9.9	13.753
5	10 10 34.94	2.0002	13 42 23.3	13.799
6	10 12 34.77	1.9941	13 28 34.0	13.842
7	10 14 34.23	1.9882	13 14 42.1	13.887
8	10 16 33.35	1.9826	13 0 47.6	13.930
9	10 18 32.14	1.9771	12 46 50.5	13.972
10	10 20 30.60	1.9716	12 32 50.9	14.012
11	10 22 28.73	1.9661	12 18 49.0	14.051
12	10 24 26.53	1.9606	12 4 44.8	14.088
13	10 26 24.00	1.9551	11 50 38.5	14.123
14	10 28 21.14	1.9497	11 36 30.0	14.160
15	10 30 17.96	1.9443	11 22 19.3	14.196
16	10 32 14.46	1.9391	11 8 6.5	14.228
17	10 34 10.65	1.9341	10 53 51.9	14.258
18	10 36 6.54	1.9291	10 39 35.5	14.288
19	10 38 2.14	1.9243	10 25 17.3	14.318
20	10 39 57.46	1.9196	10 10 57.3	14.347
21	10 41 52.49	1.9149	9 56 35.6	14.375
22	10 43 47.25	1.9104	9 42 12.3	14.401
23	10 45 41.74	1.9059	N. 9 27 47.5	14.426

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	10 47 35.96	1.9015	N. 9 13 21.2	14.450
1	10 49 29.92	1.8972	8 58 53.5	14.473
2	10 51 23.62	1.8928	8 44 24.4	14.496
3	10 53 17.06	1.8886	8 29 54.0	14.518
4	10 55 10.25	1.8846	8 15 22.3	14.538
5	10 57 3.21	1.8806	8 0 49.5	14.557
6	10 58 55.93	1.8767	7 46 15.5	14.575
7	11 0 48.42	1.8729	7 31 40.5	14.592
8	11 2 40.68	1.8692	7 17 4.5	14.608
9	11 4 32.73	1.8656	7 2 27.6	14.622
10	11 6 24.56	1.8620	6 47 49.8	14.638
11	11 8 16.18	1.8586	6 33 11.1	14.652
12	11 10 7.59	1.8552	6 18 31.6	14.664
13	11 11 58.80	1.8518	6 3 51.4	14.675
14	11 13 49.81	1.8487	5 49 10.6	14.685
15	11 15 40.64	1.8457	5 34 29.2	14.695
16	11 17 31.29	1.8427	5 19 47.2	14.705
17	11 19 21.77	1.8399	5 5 4.6	14.714
18	11 21 12.09	1.8371	4 50 21.5	14.722
19	11 23 2.23	1.8342	4 35 38.0	14.728
20	11 24 52.20	1.8315	4 20 54.1	14.734
21	11 26 42.01	1.8288	4 6 9.9	14.738
22	11 28 31.66	1.8263	3 51 25.6	14.740
23	11 30 21.17	1.8239	3 36 41.1	14.742
24	11 32 10.53	1.8214	N. 3 21 56.5	14.743

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	11 32 10.53	1.8214	N. 3 21 56.5	14.743
1	11 33 59.75	1.8191	3 7 11.9	14.743
2	11 35 48.83	1.8171	2 52 27.3	14.743
3	11 37 37.79	1.8152	2 37 42.7	14.743
4	11 39 26.65	1.8134	2 22 58.0	14.741
5	11 41 15.40	1.8116	2 8 13.4	14.738
6	11 43 4.03	1.8097	1 53 29.2	14.735
7	11 44 52.56	1.8079	1 38 45.2	14.731
8	11 46 40.98	1.8061	1 24 1.5	14.726
9	11 48 29.29	1.8043	1 9 18.1	14.720
10	11 50 17.50	1.8027	0 54 35.1	14.715
11	11 52 5.62	1.8013	0 39 52.4	14.708
12	11 53 53.66	1.8001	0 25 10.2	14.698
13	11 55 41.63	1.7989	N. 0 10 28.6	14.689
14	11 57 29.53	1.7977	S. 0 4 12.5	14.680
15	11 59 17.36	1.7966	0 18 53.0	14.670
16	12 1 5.12	1.7955	0 33 32.9	14.659
17	12 2 52.82	1.7945	0 48 12.1	14.647
18	12 4 40.46	1.7936	1 2 50.5	14.633
19	12 6 28.06	1.7928	1 17 28.1	14.620
20	12 8 15.61	1.7920	1 32 4.9	14.608
21	12 10 3.12	1.7914	1 46 40.9	14.592
22	12 11 50.59	1.7908	2 1 15.9	14.575
23	12 13 38.02	1.7903	S. 2 15 49.9	14.556

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 15 25.43	1.7900	S. 2 30 22.9	14.540
1	12 17 12.82	1.7898	2 44 54.8	14.522
2	12 19 0.20	1.7896	2 59 25.6	14.504
3	12 20 47.57	1.7894	3 13 55.3	14.485
4	12 22 34.93	1.7892	3 28 23.8	14.464
5	12 24 22.28	1.7892	3 42 51.0	14.442
6	12 26 9.63	1.7893	3 57 16.9	14.420
7	12 27 56.99	1.7895	4 11 41.4	14.397
8	12 29 44.36	1.7897	4 26 4.5	14.373
9	12 31 31.75	1.7899	4 40 26.2	14.349
10	12 33 19.15	1.7901	4 54 46.4	14.324
11	12 35 6.56	1.7904	5 9 5.1	14.298
12	12 36 53.99	1.7908	5 23 22.2	14.271
13	12 38 41.45	1.7914	5 37 37.6	14.242
14	12 40 28.95	1.7921	5 51 51.3	14.214
15	12 42 16.50	1.7928	6 6 3.3	14.185
16	12 44 4.09	1.7935	6 20 13.5	14.157
17	12 45 51.73	1.7943	6 34 22.0	14.127
18	12 47 39.42	1.7952	6 48 28.7	14.096
19	12 49 27.16	1.7962	7 2 33.5	14.062
20	12 51 14.96	1.7972	7 16 36.2	14.028
21	12 53 2.82	1.7982	7 30 36.9	13.994
22	12 54 50.74	1.7993	7 44 35.5	13.959
23	12 56 38.74	1.8007	7 58 32.0	13.924
24	12 58 26.82	1.8020	S. 8 12 26.4	13.888

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 58 26.82	1.8020	S. 8 12 26.4	13.888
1	13 0 14.98	1.8034	8 26 18.6	13.852
2	13 2 3.23	1.8049	8 40 8.6	13.815
3	13 3 51.57	1.8064	8 53 56.4	13.777
4	13 5 40.00	1.8079	9 7 41.9	13.738
5	13 7 28.52	1.8096	9 21 25.0	13.697
6	13 9 17.14	1.8112	9 35 5.6	13.656
7	13 11 5.86	1.8129	9 48 43.8	13.616
8	13 12 54.69	1.8147	10 2 19.5	13.574
9	13 14 43.63	1.8166	10 15 52.7	13.532
10	13 16 32.68	1.8184	10 29 23.3	13.488
11	13 18 21.84	1.8204	10 42 51.3	13.441
12	13 20 11.13	1.8226	10 56 16.6	13.397
13	13 22 0.55	1.8247	11 9 39 0	13.350
14	13 23 50.10	1.8269	11 22 58.6	13.305
15	13 25 39.78	1.8291	11 36 15.5	13.256
16	13 27 29.59	1.8313	11 49 29.5	13.209
17	13 29 19.54	1.8337	12 2 40.6	13.160
18	13 31 9.63	1.8361	12 15 48.7	13.109
19	13 32 59.87	1.8386	12 28 53.7	13.058
20	13 34 50.26	1.8411	12 41 55.6	13.004
21	13 36 40.80	1.8436	12 54 54.3	12.953
22	13 38 31.50	1.8461	13 7 49.9	12.900
23	13 40 22.35	1.8487	S.13 20 42.3	12.846

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	13 42 13.36	1.8514	S.13 33 31.4	12.791
1	13 44 4.54	1.8543	13 46 17.2	12.735
2	13 45 55.89	1.8572	13 58 59.6	12.678
3	13 47 47.41	1.8602	14 11 38.6	12.620
4	13 49 39.11	1.8633	14 24 14.1	12.561
5	13 51 31.00	1.8663	14 36 46.1	12.502
6	13 53 23.07	1.8693	14 49 14.4	12.441
7	13 55 15.32	1.8723	15 1 39.2	12.382
8	13 57 7.75	1.8754	15 14 0.3	12.321
9	13 59 0.37	1.8786	15 26 17.7	12.258
10	14 0 53.19	1.8819	15 38 31.3	12.195
11	14 2 46.20	1.8852	15 50 41.1	12.131
12	14 4 39.41	1.8885	16 2 47.0	12.064
13	14 6 32.82	1.8918	16 14 48.8	11.998
14	14 8 26.43	1.8952	16 26 46.7	11.934
15	14 10 20.25	1.8987	16 38 40.8	11.868
16	14 12 14.28	1.9022	16 50 30.8	11.799
17	14 14 8.52	1.9057	17 2 16.7	11.730
18	14 16 2.97	1.9093	17 13 58.4	11.658
19	14 17 57.64	1.9129	17 25 35.8	11.588
20	14 19 52.52	1.9165	17 37 8.9	11.516
21	14 21 47.62	1.9202	17 48 37.7	11.442
22	14 23 42.95	1.9240	18 0 2.1	11.370
23	14 25 38.51	1.9278	18 11 22.1	11.296
24	14 27 34.30	1.9317	S.18 22 37.6	11.222

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	14 27 34.30	1.9317	S.18 22 37.6	11.222
1	14 29 30.32	1.9356	18 33 48.6	11.145
2	14 31 26.56	1.9393	18 44 55.0	11.066
3	14 33 23.04	1.9432	18 55 56.7	10.986
4	14 35 19.75	1.9471	19 6 53.6	10.906
5	14 37 16.69	1.9509	19 17 45.7	10.826
6	14 39 13.86	1.9548	19 28 33.0	10.746
7	14 41 11.27	1.9588	19 39 15.5	10.667
8	14 43 8.92	1.9626	19 49 53.1	10.586
9	14 45 6.81	1.9668	20 0 25.8	10.505
10	14 47 4.94	1.9709	20 10 53 6	10.421
11	14 49 3.32	1.9752	20 21 16.3	10.336
12	14 51 1.95	1.9792	20 31 33.9	10.250
13	14 53 0.83	1.9836	20 41 46.3	10.162
14	14 54 59.96	1.9877	20 51 53.4	10.075
15	14 56 59.35	1.9920	21 1 55.3	9.988
16	14 58 59.00	1.9963	21 11 51.9	9.898
17	15 0 58.91	2.0007	21 21 43.1	9.806
18	15 2 59.09	2.0051	21 31 28.8	9.716
19	15 4 59.52	2.0092	21 41 9.0	9.624
20	15 7 0.20	2.0133	21 50 43.7	9.532
21	15 9 1.12	2.0173	22 0 12.9	9.440
22	15 11 2.28	2.0214	22 9 36.5	9.346
23	15 13 3.69	2.0256	S.22 18 54.4	9.248

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	15 15 5.35	2.0299	S.22 28 6.4	9.152
1	15 17 7.28	2.0343	22 37 12.6	9.057
2	15 19 9.47	2.0387	22 46 13 1	8.957
3	15 21 11.92	2.0429	22 55 7.7	8.860
4	15 23 14 62	2.0470	23 3 56.3	8.760
5	15 25 17.57	2.0512	23 12 38.9	8.659
6	15 27 20.77	2.0555	23 21 15.4	8.558
7	15 29 24.23	2.0598	23 29 45.8	8.456
8	15 31 27.95	2.0642	23 38 10.1	8.353
9	15 33 31.93	2.0685	23 46 28.2	8.250
10	15 35 36.17	2.0728	23 54 40.1	8.146
11	15 37 40.67	2.0772	24 2 45.7	8.038
12	15 39 45.43	2.0813	24 10 44.8	7.933
13	15 41 50.44	2.0856	24 18 37.6	7.826
14	15 43 55.70	2.0897	24 26 23.9	7.717
15	15 46 1.20	2.0937	24 34 3.7	7.608
16	15 48 6.94	2.0977	24 41 36.9	7.500
17	15 50 12.92	2.1017	24 49 3.6	7.389
18	15 52 19.15	2.1059	24 56 23.6	7.277
19	15 54 25.63	2.1101	25 3 36.9	7.166
20	15 56 32.36	2.1142	25 10 43.5	7.053
21	15 58 39.34	2.1183	25 17 43.3	6.939
22	16 0 46.56	2.1223	25 24 36.2	6.824
23	16 2 54.02	2.1262	25 31 22.2	6.707
24	16 5 1.71	2.1302	S.25 38 1.2	6.592

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	16 5 1.71	2.1302	S.25 38 1.2	6.592
1	16 7 9.64	2.1341	25 44 33.2	6.475
2	16 9 17.80	2.1380	25 50 58.2	6.358
3	16 11 26.19	2.1417	25 57 16.2	6.241
4	16 13 34.80	2.1454	26 3 27.1	6.124
5	16 15 43.64	2.1492	26 9 31.0	6.004
6	16 17 52.71	2.1530	26 15 27.8	5.884
7	16 20 2.00	2.1567	26 21 17.1	5.762
8	16 22 11.51	2.1603	26 26 59.2	5.641
9	16 24 21.24	2.1639	26 32 34.0	5.518
10	16 26 31.18	2.1674	26 38 1.4	5.395
11	16 28 41.33	2.1708	26 43 21.4	5.272
12	16 30 51.69	2.1743	26 48 34.0	5.147
13	16 33 2.25	2.1777	26 53 39.0	5.021
14	16 35 13.01	2.1810	26 58 36.5	4.896
15	16 37 23.97	2.1842	27 3 26 5	4.770
16	16 39 35.12	2.1874	27 8 8.9	4.643
17	16 41 46.46	2.1907	27 12 43.7	4.516
18	16 43 58.00	2.1938	27 17 10.8	4.388
19	16 46 9.72	2.1968	27 21 30.2	4.258
20	16 48 21.61	2.1997	27 25 41.8	4.129
21	16 50 33.68	2.2026	27 29 45.7	4.000
22	16 52 45.92	2.2054	27 33 41.8	3.869
23	16 54 58.33	2.2082	S.27 37 30.0	3.738

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	16 57 10.91	2.2110	S.27 41 10.4	3.606
1	16 59 23.65	2.2137	27 44 42.7	3.474
2	17 1 36.55	2.2162	27 48 7.3	3.344
3	17 3 49.60	2.2187	27 51 24.0	3.212
4	17 6 2.80	2.2212	27 54 32.7	3.078
5	17 8 16.15	2.2237	27 57 33.3	2.944
6	17 10 29 64	2.2259	28 0 25.9	2.809
7	17 12 43.26	2.2281	28 3 10.4	2.675
8	17 14 57.01	2.2302	28 5 46.9	2.540
9	17 17 10.88	2.2321	28 8 15.2	2.404
10	17 19 24.86	2.2339	28 10 35.4	2.268
11	17 21 38.95	2.2357	28 12 47.4	2.132
12	17 23 53.15	2.2376	28 14 51.2	1.995
13	17 26 7.46	2.2394	28 16 46.8	1.858
14	17 28 21.88	2.2412	28 18 34.2	1.722
15	17 30 36.40	2.2428	28 20 13.4	1.585
16	17 32 51.02	2.2444	28 21 44.4	1.446
17	17 35 5.73	2.2459	28 23 7.0	1.308
18	17 37 20.53	2.2473	28 24 21.3	1.171
19	17 39 35.40	2.2484	28 25 27.4	1.032
20	17 41 50.34	2.2496	28 26 25.1	0.892
21	17 44 5.34	2.2506	28 27 14.4	0.753
22	17 46 20.40	2.2515	28 27 55.4	0.613
23	17 48 35.52	2.2524	28 28 28.0	0.473
24	17 50 50.69	2.2533	S.28 28 52.2	0.332

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	17 50 50.69	2.2533	S.28 28 52.2	0.332
1	17 53 5.91	2.2540	28 29 8.0	0.194
2	17 55 21.17	2.2547	28 29 15.5	0.056
3	17 57 36.47	2.2553	28 29 14.7	0.082
4	17 59 51.81	2.2558	28 29 5.6	0.222
5	18 2 7.17	2.2562	28 28 48.1	0.360
6	18 4 22.55	2.2565	28 28 22.3	0.502
7	18 6 37.95	2.2567	28 27 47.9	0.643
8	18 8 53.36	2.2568	28 27 5.1	0.784
9	18 11 8.77	2.2569	28 26 13.8	0.925
10	18 13 24.18	2.2569	28 25 14.1	1.066
11	18 15 39.58	2.2568	28 24 6.0	1.205
12	18 17 54.98	2.2566	28 22 49.5	1.345
13	18 20 10.37	2.2563	28 21 24.6	1.485
14	18 22 25.74	2.2560	28 19 51.3	1.625
15	18 24 41.09	2.2556	28 18 9.6	1.765
16	18 26 56.41	2.2550	28 16 19.5	1.905
17	18 29 11.69	2.2542	28 14 21.0	2.045
18	18 31 26.92	2.2535	28 12 14.1	2.185
19	18 33 42.11	2.2528	28 9 58.8	2.325
20	18 35 57.26	2.2521	28 7 35.1	2.464
21	18 38 12.36	2.2512	28 5 3.1	2.604
22	18 40 27.40	2.2501	28 2 22.7	2.742
23	18 42 42.37	2.2490	S.27 59 34.0	2.881

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	18 44 57.28	2.2479	S.27 56 37.0	3.019
1	18 47 12.12	2.2466	27 53 31.7	3.158
2	18 49 26.88	2.2453	27 50 18.1	3.296
3	18 51 41.56	2.2440	27 46 56.2	3.432
4	18 53 56.16	2.2426	27 43 26.1	3.570
5	18 56 10.67	2.2411	27 39 47.8	3.707
6	18 58 25.09	2.2396	27 36 1.3	3.843
7	19 0 39 42	2.2379	27 32 6.6	3.979
8	19 2 53.64	2.2361	27 28 3.7	4.117
9	19 5 7.75	2.2342	27 23 52.6	4.253
10	19 7 21.75	2.2324	27 19 33.3	4.391
11	19 9 35.63	2.2305	27 15 5.7	4.528
12	19 11 49.41	2.2285	27 10 30.0	4.661
13	19 14 3 06	2.2265	27 5 46.4	4.794
14	19 16 16.59	2.2244	27 0 54.7	4.928
15	19 18 29 99	2.2222	26 55 55.0	5.061
16	19 20 43.26	2.2201	26 50 47.7	5.194
17	19 22 56.40	2.2179	26 45 31.7	5.328
18	19 25 9.41	2.2155	26 40 8.1	5.460
19	19 27 22.27	2.2131	26 34 36.5	5.592
20	19 29 34.99	2.2107	26 28 57.0	5.724
21	19 31 47.56	2.2083	26 23 9.6	5.854
22	19 33 59.98	2.2059	26 17 14.5	5.986
23	19 36 12.26	2.2034	26 11 11.5	6.115
24	19 38 24.39	2.2008	S.26 5 0.7	6.244

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SATURDAY 21.					MONDAY 23.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	19 38 24.39	2.2008	S.26 5 0.7	6.244	0	21 20 38.54	2.0587	S.18 47 51.2	11.708
1	19 40 36.36	2.1982	25 58 42.2	6.372	1	21 22 41.98	2.0560	18 36 5.8	11.805
2	19 42 48.17	2.1955	25 52 16.0	6.501	2	21 24 45.26	2.0533	18 24 14.6	11.901
3	19 44 59.81	2.1927	25 45 42.1	6.628	3	21 26 48.38	2.0507	18 12 17.7	11.995
4	19 47 11.29	2.1899	25 39 0.6	6.757	4	21 28 51.34	2.0482	18 0 15.2	12.088
5	19 49 22.60	2.1871	25 32 11.4	6.883	5	21 30 54.15	2.0457	17 48 7.1	12.182
6	19 51 33.74	2.1842	25 25 14.6	7.010	6	21 32 56.82	2.0433	17 35 53.4	12.274
7	19 53 44.71	2.1814	25 18 10.2	7.136	7	21 34 59.35	2.0410	17 23 34.2	12.366
8	19 55 55.51	2.1786	25 10 58.3	7.259	8	21 37 1.74	2.0387	17 11 9.5	12.458
9	19 58 6.14	2.1757	25 3 39.0	7.383	9	21 39 3.99	2.0363	16 58 39.3	12.548
10	20 0 16.60	2.1728	24 56 12.3	7.507	10	21 41 6.10	2.0339	16 46 3.7	12.638
11	20 2 26.89	2.1698	24 48 38.2	7.630	11	21 43 8.06	2.0316	16 33 22.8	12.725
12	20 4 36.99	2.1668	24 40 56.7	7.753	12	21 45 9 89	2.0294	16 20 36.7	12.812
13	20 6 46.91	2.1638	24 33 7.8	7.876	13	21 47 11.59	2.0272	16 7 45.4	12.898
14	20 8 56.65	2.1608	24 25 11.6	7.997	14	21 49 13.16	2.0251	15 54 48.9	12.985
15	20 11 6.21	2.1578	24 17 8.2	8.117	15	21 51 14.60	2.0230	15 41 47.2	13.071
16	20 13 15.59	2.1548	24 8 57.6	8.237	16	21 53 15.92	2.0211	15 28 40.4	13.155
17	20 15 24.79	2.1518	24 0 39.8	8.356	17	21 55 17.13	2.0192	15 15 28.6	13.238
18	20 17 33.81	2.1487	23 52 14.9	8.474	18	21 57 18.24	2.0174	15 2 11.8	13.321
19	20 19 42.64	2.1456	23 43 42.9	8.592	19	21 59 19.23	2.0155	14 48 50.1	13.402
20	20 21 51.28	2.1426	23 35 3 8	8.710	20	22 1 20.11	2.0138	14 35 23.5	13.484
21	20 23 59 73	2.1392	23 26 17.7	8.827	21	22 3 20.89	2.0122	14 21 52.0	13.565
22	20 26 7.98	2.1360	23 17 24.6	8.943	22	22 5 21.57	2.0105	14 8 15.7	13.644
23	20 28 16.05	2.1330	S.23 8 24.5	9.061	23	22 7 22.15	2.0088	S.13 54 34.7	13.721
	SUNDAY 22.					TUESDAY 24.			
0	20 30 23.94	2.1299	S.22 59 17.4	9.176	0	22 9 22.63	2.0072	S.13 40 49.1	13.800
1	20 32 31.64	2.1267	22 50 3.4	9.288	1	22 11 23.02	2.0057	13 26 58.8	13.877
2	20 34 39.15	2.1236	22 40 42.7	9.401	2	22 13 23.32	2.0043	13 13 3.9	13.953
3	20 36 46.48	2.1205	22 31 15.3	9.512	3	22 15 23.54	2.0031	12 59 4.4	14.029
4	20 38 53.62	2.1175	22 21 41.2	9.623	4	22 17 23.69	2.0019	12 45 0.4	14.103
5	20 41 0.58	2.1145	22 12 0.4	9.735	5	22 19 23.77	2.0007	12 30 52.0	14.176
6	20 43 7.37	2.1114	22 2 13.0	9.845	6	22 21 23.79	1.9995	12 16 39.3	14.249
7	20 45 13.97	2.1083	21 52 19.0	9.956	7	22 23 23.74	1.9984	12 2 22.2	14.321
8	20 47 20.38	2.1052	21 42 18.5	10.065	8	22 25 23.61	1.9973	11 48 0.8	14.392
9	20 49 26.60	2.1021	21 32 11.3	10.174	9	22 27 23.42	1.9964	11 33 35.2	14.463
10	20 51 32.63	2.0990	21 21 57.6	10.282	10	22 29 23.18	1.9956	11 19 5.3	14.531
11	20 53 38.48	2.0960	21 11 37.5	10.388	11	22 31 22.89	1.9948	11 4 31.4	14.598
12	20 55 44.15	2.0930	21 1 11.0	10.494	12	22 33 22.56	1.9942	10 49 53.5	14.665
13	20 57 49.64	2.0900	20 50 38.2	10.599	13	22 35 22.19	1.9935	10 35 11.6	14.732
14	20 59 54.95	2.0871	20 39 59.1	10.704	14	22 37 21.78	1.9929	10 20 25.7	14.798
15	21 2 0.09	2.0842	20 29 13.7	10.808	15	22 39 21.34	1.9924	10 5 35.8	14.862
16	21 4 5.05	2.0812	20 18 22.1	10.912	16	22 41 20.87	1.9920	9 50 42.1	14.926
17	21 6 9.83	2.0782	20 7 24.3	11.014	17	22 43 20.38	1.9917	9 35 44.6	14.989
18	21 8 14.44	2.0753	19 56 20.4	11.116	18	22 45 19.87	1.9914	9 20 43.4	15.051
19	21 10 18.88	2.0725	19 45 10.4	11.217	19	22 47 19.35	1.9912	9 5 38.5	15.112
20	21 12 23.15	2.0697	19 33 54.4	11.317	20	22 49 18.82	1.9911	8 50 29.9	15.173
21	21 14 27.25	2.0669	19 22 32.4	11.416	21	22 51 18.28	1.9910	8 35 17.7	15.232
22	21 16 31.18	2.0641	19 11 4.5	11.514	22	22 53 17.74	1.9911	8 20 2.0	15.290
23	21 18 34.94	2.0613	18 59 30.7	11.610	23	22 55 17.21	1.9913	8 4 42.9	15.347
24	21 20 38.54	2.0587	S.18 47 51.2	11.708	24	22 57 16.69	1.9915	S. 7 49 20.4	15.402

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	22 57 16.69	1.9915	S. 7 49 20.4	15.402
1	22 59 16.19	1.9918	7 33 54.6	15.458
2	23 1 15.71	1.9922	7 18 25.5	15.513
3	23 3 15.25	1.9925	7 2 53.1	15.567
4	23 5 14.81	1.9929	6 47 17.5	15.621
5	23 7 14.40	1.9935	6 31 38.7	15.672
6	23 9 14.03	1.9942	6 15 56.9	15.722
7	23 11 13.71	1.9952	6 0 12.1	15.771
8	23 13 13.45	1.9961	5 44 24.4	15.819
9	23 15 13.24	1.9970	5 28 33.8	15.865
10	23 17 13.09	1.9981	5 12 40.5	15.911
11	23 19 13.01	1.9992	4 56 44.5	15.955
12	23 21 13.01	2.0005	4 40 45.9	15.998
13	23 23 13.07	2.0018	4 24 44.7	16.040
14	23 25 13.22	2.0032	4 8 40.9	16.085
15	23 27 13.46	2.0047	3 52 34.5	16.127
16	23 29 13.79	2.0062	3 36 25.7	16.168
17	23 31 14.21	2.0078	3 20 14.5	16.205
18	23 33 14.74	2.0096	3 4 1.1	16.242
19	23 35 15.37	2.0115	2 47 45.5	16.277
20	23 37 16.12	2.0135	2 31 27.8	16.312
21	23 39 16.99	2.0156	2 15 7.9	16.348
22	23 41 17.99	2.0178	1 58 46.0	16.381
23	23 43 19.13	2.0202	S. 1 42 22.2	16.412

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	23 45 20.41	2.0225	S. 1 25 56.5	16.442
1	23 47 21.83	2.0248	1 9 29.2	16.471
2	23 49 23.39	2.0272	0 53 0.1	16.499
3	23 51 25.09	2.0298	0 36 29.3	16.525
4	23 53 26.95	2.0326	0 19 57.0	16.552
5	23 55 28.99	2.0354	S. 0 3 23.2	16.575
6	23 57 31.20	2.0382	N. 0 13 12.0	16.598
7	23 59 33.58	2.0412	0 29 48.6	16.618
8	0 1 36.14	2.0444	0 46 26.4	16.638
9	0 3 38.90	2.0477	1 3 5.3	16.657
10	0 5 41.86	2.0510	1 19 45.4	16.672
11	0 7 45.02	2.0544	1 36 26.4	16.688
12	0 9 48.37	2.0579	1 53 8.4	16.702
13	0 11 51.95	2.0614	2 9 51.1	16.718
14	0 13 55.74	2.0650	2 26 34.6	16.732
15	0 15 59.75	2.0687	2 43 18.9	16.743
16	0 18 3.99	2.0728	3 0 3.8	16.752
17	0 20 8.46	2.0765	3 16 49.2	16.760
18	0 22 13.17	2.0805	3 33 35.0	16.766
19	0 24 18.13	2.0848	3 50 21.1	16.770
20	0 26 23.35	2.0892	4 7 7.4	16.772
21	0 28 28.83	2.0937	4 23 53.8	16.773
22	0 30 34.58	2.0981	4 40 40.2	16.773
23	0 32 40.60	2.1027	4 57 26.6	16.772
24	0 34 46.91	2.1074	N. 5 14 12.8	16.768

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	0 34 46.91	2.1074	N. 5 14 12.8	16.768
1	0 36 53.50	2.1121	5 30 58.7	16.764
2	0 39 0.37	2.1170	5 47 44.3	16.759
3	0 41 7.54	2.1221	6 4 29.6	16.751
4	0 43 15.02	2.1272	6 21 14.4	16.742
5	0 45 22.81	2.1323	6 37 58.6	16.731
6	0 47 30.91	2.1377	6 54 42.1	16.718
7	0 49 39.33	2.1431	7 11 24.8	16.703
8	0 51 48.08	2.1486	7 28 6.5	16.684
9	0 53 57.16	2.1542	7 44 47.0	16.665
10	0 56 6.58	2.1599	8 1 26.3	16.644
11	0 58 16.34	2.1656	8 18 4.3	16.622
12	1 0 26.45	2.1714	8 34 40.9	16.599
13	1 2 36.91	2.1773	8 51 16.1	16.573
14	1 4 47.73	2.1834	9 7 49.7	16.546
15	1 6 58.93	2.1896	9 24 21.6	16.517
16	1 9 10.48	2.1960	9 40 51.7	16.485
17	1 11 22.43	2.2024	9 57 19.8	16.452
18	1 13 34.77	2.2088	10 13 45.9	16.415
19	1 15 47.50	2.2152	10 30 9.7	16.378
20	1 18 0.60	2.2217	10 46 31.3	16.341
21	1 20 14.10	2.2285	11 2 50.6	16.301
22	1 22 28.01	2.2353	11 19 7.4	16.258
23	1 24 42.33	2.2422	N.11 35 21.6	16.213

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	1 26 57.08	2.2492	N.11 51 33.0	16.166
1	1 29 12.25	2.2564	12 7 41.5	16.116
2	1 31 27.85	2.2635	12 23 46 9	16.062
3	1 33 43.87	2.2707	12 39 49.1	16.009
4	1 36 0 33	2.2782	12 55 48.0	15.958
5	1 38 17.25	2.2858	13 11 43.5	15.896
6	1 40 34.63	2.2935	13 27 35.5	15.836
7	1 42 52.47	2.3012	13 43 23.8	15.775
8	1 45 10.77	2.3088	13 59 8.4	15.710
9	1 47 29.53	2.3167	14 14 49.0	15.642
10	1 49 48.76	2.3244	14 30 25.5	15.573
11	1 52 8.46	2.3321	14 45 57.8	15.502
12	1 54 28.62	2.3399	15 1 25.7	15.428
13	1 56 49.25	2.3477	15 16 49.1	15.352
14	1 59 10.35	2.3557	15 32 7.9	15.274
15	2 1 31.93	2.3639	15 47 22.0	15.194
16	2 3 54.01	2.3722	16 2 31.2	15.112
17	2 6 16.59	2.3805	16 17 35.4	15.028
18	2 8 39.67	2.3888	16 32 34.5	14.940
19	2 11 3.25	2.3972	16 47 28.2	14.849
20	2 13 27.33	2.4055	17 2 16.4	14.756
21	2 15 51.91	2.4138	17 16 58.9	14.661
22	2 18 16.99	2.4223	17 31 35.7	14.564
23	2 20 42.59	2.4310	17 46 6.6	14.464
24	2 23 8.71	2.4397	N.18 0 31.4	14.361

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 29.					MONDAY 30.			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	2 23 8.71	2.4397	N.18 0 31.4	14.361	0	3 24 12.73	2.6485	N.23 9 47.5	11.172
1	2 25 35.36	2.4484	18 14 49.9	14.256	1	3 26 51.89	2.6567	23 20 52.9	11.008
2	2 28 2.52	2.4570	18 29 2.1	14.151	2	3 29 31.55	2.6648	23 31 48.4	10.842
3	2 30 30.20	2.4657	18 43 8.0	14.042	3	3 32 11.68	2.6728	23 42 33.9	10.673
4	2 32 58.40	2.4744	18 57 7.3	13.932	4	3 34 52.29	2.6808	23 53 9.2	10.502
5	2 35 27.12	2.4831	19 10 59.8	13.817	5	3 37 33.38	2.6888	24 3 34.2	10.328
6	2 37 56.37	2.4919	19 24 45.3	13.699	6	3 40 14.93	2.6967	24 13 48.7	10.154
7	2 40 26.15	2.5007	19 38 23.7	13.580	7	3 42 56 96	2.7045	24 23 52.7	9.979
8	2 42 56.45	2.5095	19 51 54.9	13.458	8	3 45 39.46	2.7121	24 33 46.1	9.800
9	2 45 27.28	2.5183	20 5 18.7	13.333	9	3 48 22.41	2.7197	24 43 28.7	9.618
10	2 47 58.65	2.5271	20 18 34.9	13.210	10	3 51 5.82	2:7272	24 53 0.3	9.434
11	2 50 30.54	2.5359	20 31 43.4	13.077	11	3 53 49.68	2.7346	25 2 20.8	9.248
12	2 53 2.96	2.5447	20 44 44.1	12.946	12	3 56 33.98	2.7419	25 11 30.0	9.058
13	2 55 35 91	2.5535	20 57 36.8	12.811	13	3 59 18 71	2.7489	25 20 27.8	8.868
14	2 58 9.39	2.5623	21 10 21.4	12.678	14	4 2 3.84	2.7557	25 29 14.2	8.678
15	3 0 43.39	2.5710	21 22 57.7	12.535	15	4 4 49 38	2.7624	25 37 49.1	8.485
16	3 3 17.91	2.5797	21 35 25.6	12.392	16	4 7 35.32	2.7690	25 46 12.4	8.290
17	3 5 52.95	2.5883	21 47 45.0	12.250	17	4 10 21.66	2.7756	25 54 23.9	8.092
18	3 8 28.51	2.5970	21 59 55.6	12.102	18	4 13 8.39	2.7821	26 2 23.4	7.890
19	3 11 4.59	2.6057	22 11 57.2	11.952	19	4 15 55.51	2.7883	26 10 10.7	7.687
20	3 13 41.19	2.6143	22 23 49.8	11.801	20	4 18 42.99	2.7941	26 17 45.9	7.486
21	3 16 18.30	2.6229	22 35 33.3	11.648	21	4 21 30.80	2.7996	26 25 9.0	7.283
22	3 18 55.93	2.6315	22 47 7.5	11.492	22	4 24 18.94	2.8050	26 32 19.9	7.078
23	3 21 34 08	2.6400	22 58 32.3	11.333	23	4 27 7.40	2.8102	26 39 18.4	6.871
24	3 24 12.73	2.6485	N.23 9 47.5	11.172	24	4 29 56.17	2.8153	N.26 46 4.4	6.662

PHASES OF THE MOON.

	Day.	h.	m.
○ Full Moon, ...	1	12	57.8
☾ Last Quarter, ...	8	4	14.7
● New Moon, ...	16	3	54.7
☽ First Quarter	24	5	33.0
○ Full Moon, ...	30	22	57.4

	Day.	h.
☾ Perigee, ...	2	5
☾ Apogee, ...	16	20
☾ Perigee, ...	30	17

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Aquilæ	W.	89 58 2	2790	91 32 43	2786	93 7 29	2782	94 42 20	2782
	Fomalhaut	W.	63 0 32	2300	64 46 31	2285	66 32 52	2271	68 19 34	2259
	α Pegasi	W.	42 16 26	2608	43 55 10	2561	45 34 58	2519	47 15 45	2484
	Aldebaran	E.	37 20 20	2206	35 32 2	2230	33 44 5	2239	31 56 35	2262
	Pollux	E.	79 36 6	2000	77 42 32	1994	75 48 48	1988	73 54 55	1984
	Saturn	E.	86 54 50	2015	85 1 39	2009	83 8 18	2003	81 14 48	1998
2	Fomalhaut	W.	77 16 49	2220	79 4 47	2217	80 52 49	2215	82 40 54	2215
	α Pegasi	W.	55 50 38	2356	57 35 16	2340	59 20 17	2326	61 5 39	2315
	Pollux	E.	64 24 2	1971	62 29 42	1972	60 35 23	1973	58 41 6	1975
	Saturn	E.	71 45 51	1986	69 51 55	1987	67 58 0	1987	66 4 5	1989
	Regulus	E.	101 11 49	1970	99 17 28	1971	97 23 8	1972	95 28 49	1978
3	Fomalhaut	W.	91 40 50	2231	93 28 32	2238	95 16 2	2247	97 3 21	2257
	α Pegasi	W.	69 55 36	2287	71 41 55	2287	73 28 14	2287	75 14 32	2291
	α Arietis	W.	26 28 58	2133	28 19 7	2122	30 9 33	2115	32 0 9	2112
	Jupiter	W.	21 48 27	2064	23 40 22	2054	25 32 32	2048	27 24 51	2044
	Pollux	E.	49 10 42	1994	47 16 58	2000	45 23 24	2008	43 30 2	2016
	Saturn	E.	56 35 44	2011	54 42 27	2017	52 49 20	2026	50 56 26	2035
	Regulus	E.	85 58 13	1992	84 4 26	1998	82 10 48	2005	80 17 21	2012
	Mars	E.	110 13 0	2165	108 23 40	2171	106 34 29	2178	104 45 28	2186
4	α Arietis	W.	41 13 29	2123	43 3 53	2130	44 54 7	2137	46 44 9	2146
	Jupiter	W.	36 46 26	2062	38 38 24	2070	40 30 10	2078	42 21 43	2086
	Pollux	E.	34 6 37	2066	32 14 45	2077	30 23 12	2091	28 31 59	2105
	Saturn	E.	41 35 39	2089	39 44 23	2103	37 53 28	2117	36 2 55	2132
	Regulus	E.	70 53 24	2059	69 1 22	2071	67 9 38	2083	65 18 12	2096
	Mars	E.	95 43 43	2235	93 56 8	2247	92 8 51	2260	90 21 52	2272
	Venus	E.	117 4 44	2439	115 22 5	2451	113 39 43	2464	111 57 39	2477
5	α Arietis	W.	55 50 32	2202	57 38 56	2215	59 27 1	2229	61 14 45	2244
	Jupiter	W.	51 35 23	2147	53 25 11	2160	55 14 39	2174	57 3 46	2188
	Aldebaran	W.	26 14 35	2529	27 55 8	2502	29 36 19	2482	31 17 57	2470
	Regulus	E.	56 6 3	2165	54 16 42	2180	52 27 44	2195	50 39 9	2210
	Mars	E.	81 31 52	2344	79 46 56	2357	78 2 23	2375	76 18 13	2391
	Venus	E.	103 32 15	2552	101 52 14	2566	100 12 35	2585	98 33 19	2602
	Sun	E.	130 59 58	2485	129 18 24	2501	127 37 12	2516	125 56 21	2532
6	α Arietis	W.	70 7 56	2320	71 53 26	2336	73 38 33	2352	75 23 17	2368
	Jupiter	W.	66 3 44	2265	67 50 35	2281	69 37 2	2298	71 23 4	2315
	Aldebaran	W.	39 48 49	2459	41 31 0	2465	43 13 3	2471	44 54 57	2480
	Regulus	E.	41 42 11	2294	39 56 2	2311	38 10 18	2328	36 24 59	2345
	Mars	E.	67 43 14	2476	66 1 27	2494	64 20 5	2512	62 39 8	2529
	Venus	E.	90 22 58	2692	88 46 7	2710	87 9 41	2729	85 33 40	2748
	Sun	E.	117 37 52	2618	115 59 22	2636	114 21 16	2654	112 43 34	2672
7	α Arietis	W.	84 0 47	2451	85 43 5	2470	87 25 2	2487	89 6 24	2504
	Jupiter	W.	80 7 14	2398	81 50 52	2414	83 34 7	2431	85 16 57	2448
	Aldebaran	W.	53 21 9	2533	55 1 36	2546	56 41 45	2559	58 21 37	2572
	Mars	E.	54 20 31	2618	52 42 1	2637	51 3 56	2655	49 26 15	2672
	Venus	E.	77 39 48	2843	76 6 16	2862	74 33 8	2881	73 0 25	2901
	Sun	E.	104 41 11	2764	103 5 56	2782	101 31 5	2801	99 56 38	2819
8	Jupiter	W.	93 45 18	2530	95 25 50	2545	97 6 0	2561	98 45 48	2577
	Aldebaran	E.	66 36 19	2640	68 14 19	2655	69 51 59	2669	71 29 20	2684

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Aquilæ W.	96 17 11	2784	97 52 0	2788	99 26 44	2794	101 1 20	2801
	Fomalhaut W.	70 6 34	2248	71 53 50	2239	73 41 19	2232	75 28 59	2225
	α Pegasi W.	48 57 21	2450	50 39 44	2422	52 22 48	2396	54 6 28	2375
	Aldebaran E.	30 9 40	2291	28 23 27	2331	26 38 13	2378	24 54 6	2438
	Pollux E.	72 0 55	1979	70 6 48	1976	68 12 36	1974	66 18 20	1972
	Saturn E.	79 21 11	1994	77 27 27	1991	75 33 38	1989	73 39 46	1987
2	Fomalhaut W.	84 28 59	2216	86 17 3	2218	88 5 4	2220	89 53 1	2224
	α Pegasi W.	62 51 16	2305	64 37 8	2298	66 23 10	2292	68 9 21	2289
	Pollux E.	56 46 52	1978	54 52 40	1980	52 58 34	1984	51 4 34	1989
	Saturn E.	64 10 14	1992	62 16 27	1995	60 22 45	2000	58 29 10	2005
	Regulus E.	93 34 32	1975	91 40 19	1978	89 46 10	1982	87 52 7	1987
3	Fomalhaut W.	98 50 24	2268	100 37 11	2279	102 23 41	2291	104 9 53	2304
	α Pegasi W.	77 0 45	2294	78 46 53	2300	80 32 53	2306	82 18 44	2312
	α Arietis W.	33 50 50	2110	35 41 34	2111	37 32 17	2113	39 22 56	2117
	Jupiter W.	29 17 16	2045	31 9 40	2046	33 2 2	2050	34 54 18	2055
	Pollux E.	41 36 52	2024	39 43 55	2033	37 51 13	2044	35 58 47	2054
	Saturn E.	49 3 46	2014	47 11 20	2053	45 19 9	2064	43 27 15	2076
	Regulus E.	78 24 6	2021	76 31 4	2030	74 38 16	2039	72 45 42	2049
	Mars E.	102 56 39	2194	101 8 3	2204	99 19 42	2214	97 31 35	2224
4	α Arietis W.	48 33 58	2156	50 23 32	2167	52 12 50	2178	54 1 50	2190
	Jupiter W.	44 13 1	2098	46 4 3	2109	47 54 48	2121	49 45 15	2134
	Pollux E.	26 41 7	2119	24 50 37	2134	23 0 30	2152	21 10 50	2172
	Saturn E.	34 12 45	2149	32 23 1	2167	30 33 43	2186	28 44 54	2206
	Regulus E.	63 27 6	2108	61 36 19	2121	59 45 52	2136	57 55 47	2149
	Mars E.	88 35 11	2285	86 48 50	2300	85 2 50	2314	83 17 11	2328
	Venus E.	110 15 53	2481	108 34 27	2506	106 53 22	2521	105 12 38	2536
5	α Arietis W.	63 2 7	2359	64 49 7	2374	66 35 45	2238	68 22 2	2304
	Jupiter W.	58 52 31	2204	60 40 53	2218	62 28 53	2234	64 16 30	2249
	Aldebaran W.	32 59 53	2460	34 42 2	2456	36 24 17	2455	38 6 34	2456
	Regulus E.	48 50 57	2227	47 3 9	2243	45 15 45	2260	43 28 46	2276
	Mars E.	74 34 25	2408	72 51 1	2425	71 8 2	2441	69 25 26	2458
	Venus E.	96 54 27	2610	95 15 58	2638	93 37 59	2655	92 0 14	2673
	Sun E.	124 15 52	2549	122 35 47	2566	120 56 5	2583	119 16 47	2600
6	α Arietis W.	77 7 37	2386	78 51 32	2402	80 35 4	2419	82 18 12	2436
	Jupiter W.	73 8 42	2331	74 53 56	2347	76 38 47	2364	78 23 13	2382
	Aldebaran W.	46 36 39	2489	48 18 8	2498	49 59 24	2509	51 40 25	2521
	Regulus E.	34 40 5	2364	32 55 38	2381	31 11 36	2399	29 28 0	2417
	Mars E.	60 58 35	2547	59 18 27	2564	57 38 43	2583	55 59 25	2601
	Venus E.	83 58 4	2767	82 22 53	2785	80 48 6	2805	79 13 44	2826
	Sun E.	111 6 16	2690	109 29 23	2709	107 52 55	2727	106 16 51	2745
7	α Arietis W.	90 47 42	2521	92 28 26	2539	94 8 47	2554	95 48 45	2569
	Jupiter W.	86 59 23	2465	88 41 26	2481	90 23 6	2497	92 4 24	2514
	Aldebaran W.	60 1 11	2585	61 40 27	2599	63 19 23	2612	64 58 1	2627
	Mars E.	47 48 58	2690	46 12 5	2708	44 35 36	2725	42 59 29	2743
	Venus E.	71 28 7	2918	69 56 11	2937	68 24 39	2956	66 53 31	2975
	Sun E.	98 22 35	2837	96 48 55	2855	95 15 38	2873	93 42 44	2891
8	Jupiter W.	100 25 14	2593	102 4 19	2607	103 43 4	2623	105 21 28	2638
	Aldebaran E.	73 6 22	2698	74 43 5	2710	76 19 31	2724	77 55 37	2739

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Pollux W.	22 46 29	2574	24 26 0	2588	26 5 12	2602	27 44 4	2617
	Mars E.	41 23 46	2760	39 48 25	2777	38 13 27	2794	36 38 51	2811
	Venus E.	65 22 47	2993	63 52 25	3011	62 22 26	3030	60 52 50	3047
	Sun E.	92 10 13	2909	90 38 5	2926	89 6 19	2943	87 34 55	2960
9	Jupiter W.	106 59 31	2652	108 37 15	2666	110 14 40	2681	111 51 45	2696
	Aldebaran W.	79 31 25	2753	81 6 56	2766	82 42 8	2779	84 17 3	2793
	Pollux W.	35 53 34	2687	37 30 31	2700	39 7 11	2713	40 43 33	2726
	Saturn W.	28 46 2	2731	30 22 1	2741	31 57 47	2750	33 33 21	2760
	Mars E.	28 51 12	2891	27 18 42	2907	25 46 32	2923	24 14 42	2939
	Venus E.	53 30 12	3133	52 2 42	3150	50 35 33	3166	49 8 43	3183
	Sun E.	80 3 9	3042	78 33 48	3057	77 4 46	3073	75 36 3	3088
10	Aldebaran W.	92 7 23	2856	93 40 38	2868	95 13 3[illegible]	2880	96 46 22	2892
	Pollux W.	48 41 3	2789	50 15 45	2801	51 50 11	2813	53 24 22	2824
	Saturn W.	41 27 48	2812	43 2 0	2821	44 36 0	2832	46 9 46	2842
	Venus E.	41 59 18	3259	40 34 19	3274	39 9 37	3288	37 45 12	3304
	Sun E.	68 16 57	3166	66 49 58	3173	65 23 16	3185	63 56 49	3198
11	Pollux W.	61 11 50	2876	62 44 40	2885	64 17 18	2894	65 49 45	2903
	Saturn W.	53 55 30	2890	55 28 2	2898	57 0 23	2907	58 32 33	2915
	Regulus W.	24 25 47	2886	25 58 24	2894	27 30 51	2902	29 3 7	2909
	Venus E.	30 47 26	3378	29 24 44	3392	28 2 18	3407	26 40 9	3423
	Sun E.	56 48 15	3258	55 23 14	3269	53 58 26	3280	52 33 51	3290
12	Pollux W.	73 29 14	2943	75 0 38	2951	76 31 52	2958	78 2 58	2964
	Saturn W.	66 10 54	2953	67 42 6	2960	69 13 9	2967	70 44 3	2973
	Regulus W.	36 42 2	2947	38 13 21	2954	39 44 31	2961	41 15 33	2967
	Sun E.	45 33 53	3340	44 10 28	3349	42 47 13	3358	41 24 9	3367
13	Pollux W.	85 36 24	2995	87 6 43	3001	88 36 55	3005	90 7 1	3010
	Saturn W.	78 16 40	3002	79 46 50	3008	81 16 53	3013	82 46 50	3018
	Regulus W.	48 48 46	2996	50 19 2	3002	51 49 12	3005	53 19 17	3011
	Sun E.	34 31 23	3412	33 9 20	3422	31 47 28	3431	30 25 47	3439
18	Sun W.	20 31 11	3555	21 50 34	3543	23 10 11	3532	24 30 0	3522
	α Aquilæ E.	54 9 10	4440	53 4 25	4498	52 0 27	4552	50 57 21	4615
	Fomalhaut E.	74 57 23	3336	73 33 52	3338	72 10 24	3340	70 46 59	3344
	α Pegasi E.	96 45 52	3333	95 22 19	3331	93 58 43	3327	92 35 3	3325
19	Sun W.	31 11 29	3483	32 32 12	3476	33 53 3	3470	35 14 1	3463
	Fomalhaut E.	63 50 55	3364	62 27 57	3369	61 5 5	3374	59 42 19	3380
	α Pegasi E.	85 36 0	3313	84 12 3	3312	82 48 5	3309	81 24 4	3306
20	Sun W.	42 0 47	3429	43 22 31	3421	44 44 24	3413	46 6 26	3406
	Fomalhaut E.	52 50 37	3425	51 28 49	3437	50 7 14	3450	48 45 54	3465
	α Pegasi E.	74 23 30	3300	72 59 18	3299	71 35 5	3298	70 10 51	3297
	Jupiter E.	118 27 58	2998	116 57 37	2988	115 27 9	2981	113 56 32	2973
21	Sun W.	52 58 51	3363	54 21 50	3353	55 45 0	3344	57 8 21	3333
	Fomalhaut E.	42 4 8	3573	40 45 4	3604	39 26 34	3639	38 8 42	3678
	α Pegasi E.	63 9 37	3299	61 45 25	3300	60 21 14	3303	58 57 6	3306
	α Arietis E.	104 11 59	2994	102 41 39	2985	101 11 8	2977	99 40 26	2968
	Jupiter E.	106 21 20	2936	104 49 49	2929	103 18 7	2921	101 46 15	2912

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Pollux	W.	29 22 36	2630	31 0 50	2645	32 38 44	2659	34 16 19	2674
	Mars	E.	35 4 37	2827	33 30 44	2844	31 57 13	2859	30 24 2	2876
	Venus	E.	59 23 36	3066	57 54 43	3082	56 26 11	3100	54 58 1	3117
	Sun	E.	86 3 52	2977	84 33 10	2993	83 2 49	3010	81 32 49	3026
9	Jupiter	W.	113 28 32	2708	115 5 1	2722	116 41 12	2735	118 17 5	2749
	Aldebaran	W.	85 51 40	2806	87 26 0	2818	89 0 4	2831	90 33 51	2843
	Pollux	W.	42 19 36	2741	43 55 22	2753	45 30 52	2765	47 6 6	2778
	Saturn	W.	35 8 41	2770	36 43 48	2780	38 18 42	2791	39 53 22	2801
	Mars	E.	22 43 12	2954	21 12 1	2969	19 41 10	2986	18 10 38	3002
	Venus	E.	47 42 13	3198	46 16 2	3214	44 50 9	3230	43 24 35	3244
	Sun	E.	74 7 39	3103	72 39 33	3118	71 11 45	3131	69 44 13	3144
10	Aldebaran	W.	98 18 51	2904	99 51 5	2916	101 23 4	2926	102 54 50	2935
	Pollux	W.	54 58 19	2835	56 32 2	2845	58 5 31	2855	59 38 47	2866
	Saturn	W.	47 43 20	2852	49 16 41	2862	50 49 49	2871	52 22 45	2880
	Venus	E.	36 21 5	3319	34 57 15	3333	33 33 42	3347	32 10 25	3363
	Sun	E.	62 30 37	3210	61 4 40	3223	59 38 58	3235	58 13 30	3246
11	Pollux	W.	67 22 0	2912	68 54 4	2920	70 25 58	2928	71 57 41	2936
	Saturn	W.	60 4 33	2923	61 36 23	2931	63 8 3	2939	64 39 33	2946
	Regulus	W.	30 35 14	2918	32 7 10	2925	33 38 57	2933	35 10 34	2940
	Venus	E.	25 18 19	3440	23 56 47	3458	22 35 36	3476	21 14 45	3494
	Sun	E.	51 9 28	3300	49 45 17	3311	48 21 18	3320	46 57 30	3330
12	Pollux	W.	79 33 56	2971	81 4 45	2978	82 35 25	2984	84 5 58	2989
	Saturn	W.	72 14 50	2979	73 45 29	2986	75 15 59	2991	76 46 23	2997
	Regulus	W.	42 46 27	2973	44 17 13	2980	45 47 51	2985	47 18 22	2991
	Sun	E.	40 1 15	3377	38 38 32	3386	37 15 59	3393	35 53 36	3401
13	Pollux	W.	91 37 1	3015	93 6 55	3020	94 36 43	3025	96 6 25	3030
	Saturn	W.	84 16 42	3022	85 46 27	3026	87 16 7	3031	88 45 41	3039
	Regulus	W.	54 49 16	3017	56 19 8	3022	57 48 54	3026	59 18 35	3030
	Sun	E.	29 4 15	3450	27 42 55	3461	26 21 47	3471	25 0 51	3482
18	Sun	W.	25 50 0	3514	27 10 9	3506	28 30 27	3497	29 50 54	3490
	α Aquilæ	E.	49 55 9	4683	48 53 55	4757	47 53 43	4837	46 54 37	4924
	Fomalhaut	E.	69 23 38	3347	68 0 21	3351	66 37 8	3354	65 13 59	3356
	α Pegasi	E.	91 11 20	3322	89 47 34	3320	88 23 46	3317	86 59 54	3315
19	Sun	W.	36 35 7	3456	37 56 20	3449	39 17 41	3442	40 39 10	3435
	Fomalhaut	E.	58 19 40	3388	56 57 10	3396	55 34 49	3405	54 12 38	3414
	α Pegasi	E.	80 0 0	3306	78 35 55	3304	77 11 48	3303	75 47 40	3301
20	Sun	W.	47 28 36	3398	48 50 55	3390	50 13 23	3380	51 36 2	3372
	Fomalhaut	E.	47 24 51	3481	46 4 6	3501	44 43 43	3522	43 23 43	3545
	α Pegasi	E.	68 46 36	3297	67 22 21	3298	65 58 7	3297	64 33 52	3297
	Jupiter	E.	112 25 46	2968	110 54 53	2962	109 23 52	2954	107 52 41	2946
21	Sun	W.	58 31 54	3324	59 55 38	3313	61 19 35	3301	62 43 45	3290
	Fomalhaut	E.	36 51 32	3725	35 35 11	3777	34 19 45	3838	33 5 22	3910
	α Pegasi	E.	57 33 0	3309	56 8 59	3313	54 45 3	3319	53 21 14	3325
	α Arietis	E.	98 9 33	2959	96 38 29	2949	95 7 12	2939	93 35 43	2929
	Jupiter	E.	100 14 12	2908	98 41 57	2894	97 9 31	2884	95 36 52	2874

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
22	Sun	W.	64 8 8	3279	65 32 44	3266	66 57 35	3254	68 22 40	3241
	α Pegasi	E.	51 57 32	3333	50 33 59	3343	49 10 37	3352	47 47 26	3367
	α Arietis	E.	92 4 1	2918	90 32 5	2907	88 59 55	2896	87 27 31	2885
	Jupiter	E.	94 4 0	2864	92 30 55	2854	90 57 37	2842	89 24 4	2831
23	Sun	W.	75 32 2	3172	76 58 45	3157	78 25 46	3142	79 53 5	3127
	α Pegasi	E.	40 56 20	3474	39 35 27	3507	38 15 11	3547	36 55 39	3593
	α Arietis	E.	79 41 45	2823	78 7 47	2809	76 33 31	2796	74 58 58	2782
	Jupiter	E.	81 32 25	2770	79 57 18	2757	78 21 54	2744	76 46 12	2730
24	Sun	W.	87 14 30	3043	88 43 49	3026	90 13 29	3009	91 43 31	2991
	α Aquilæ	W.	42 22 49	4986	43 19 55	4830	44 19 7	4686	45 20 19	4554
	α Arietis	E.	67 1 34	2710	65 25 7	2695	63 48 20	2679	62 11 12	2663
	Jupiter	E.	68 42 54	2656	67 5 15	2640	65 27 15	2625	63 48 54	2609
	Aldebaran	E.	98 6 13	2747	96 30 36	2730	94 54 36	2714	93 18 15	2698
25	Sun	W.	99 19 20	2898	100 51 41	2880	102 24 26	2860	103 57 36	2842
	α Aquilæ	W.	50 52 55	4024	52 4 11	3938	53 16 52	3859	54 30 53	3783
	α Arietis	E.	54 0 17	2585	52 21 2	2569	50 41 25	2553	49 1 26	2538
	Jupiter	E.	55 31 37	2527	53 51 2	2511	52 10 4	2494	50 28 43	2478
	Aldebaran	E.	85 10 50	2612	83 32 11	2594	81 53 8	2577	80 13 42	2560
26	Sun	W.	111 49 41	2744	113 25 23	2725	115 1 30	2706	116 38 2	2687
	α Aquilæ	W.	60 59 9	3471	62 20 5	3420	63 41 59	3370	65 4 50	3324
	Fomalhaut	W.	31 48 2	3402	33 10 16	3296	34 34 32	3199	36 0 42	3113
	α Arietis	E.	40 36 20	2467	38 54 20	2454	37 12 2	2441	35 29 26	2431
	Jupiter	E.	41 56 9	2396	40 12 29	2380	38 28 26	2365	36 44 1	2351
	Aldebaran	E.	71 50 33	2475	70 8 44	2457	68 26 30	2441	66 43 53	2425
	Saturn	E.	122 1 45	2401	120 18 12	2382	118 34 11	2363	116 49 43	2344
27	Sun	W.	124 47 8	2594	126 26 11	2576	128 5 39	2559	129 45 30	2542
	α Aquilæ	W.	72 11 46	2124	73 39 26	3091	75 7 46	3059	76 36 46	3034
	Fomalhaut	W.	43 34 58	2785	45 9 45	2738	46 45 35	2692	48 22 26	2649
	Aldebaran	E.	58 5 18	2351	56 20 33	2337	54 35 28	2326	52 50 6	2314
	Pollux	E.	100 58 4	2253	99 10 56	2236	97 23 22	2219	95 35 23	2202
	Saturn	E.	108 0 37	2253	106 13 28	2235	104 25 53	2218	102 37 53	2200
28	α Aquilæ	W.	84 10 8	2910	85 42 14	2891	87 14 44	2875	88 47 35	2860
	Fomalhaut	W.	56 39 56	2475	58 21 44	2447	60 4 12	2420	61 47 18	2396
	α Pegasi	W.	36 23 30	2920	37 55 24	2841	39 28 59	2772	41 4 4	2709
	Aldebaran	E.	43 59 34	2274	42 12 56	2270	40 26 13	2270	38 39 30	2270
	Pollux	E.	86 29 18	2123	84 38 54	2109	82 48 8	2094	80 57 0	2081
	Saturn	E.	93 31 33	2121	91 41 6	2106	89 50 16	2092	87 59 5	2079
29	Fomalhaut	W.	70 30 54	2296	72 17 0	2279	74 3 30	2266	75 50 20	2253
	α Pegasi	W.	49 17 55	2478	50 59 39	2443	52 42 12	2413	54 25 28	2386
	Pollux	E.	71 36 29	2023	69 43 30	2012	67 50 15	2003	65 56 45	1995
	Saturn	E.	78 38 14	2020	76 45 11	2010	74 51 53	2001	72 58 21	1993
	Regulus	E.	108 24 32	2021	106 31 30	2011	104 38 13	2001	102 44 41	1993
30	Fomalhaut	W.	84 48 38	2208	86 36 53	2203	88 25 16	2200	90 13 44	2198
	α Pegasi	W.	63 10 34	2283	64 56 58	2270	66 43 42	2258	68 30 44	2247
	Pollux	E.	56 26 25	1964	54 31 54	1961	52 37 18	1958	50 42 37	1955
	Saturn	E.	63 27 47	1963	61 33 14	1960	59 38 36	1957	57 43 54	1955
	Regulus	E.	93 14 6	1962	91 19 31	1958	89 24 50	1954	87 30 3	1953

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
22	Sun	W.	69 48 1	3228	71 13 37	3214	72 39 29	3201	74 5 37	3187
	a Pegasi	E.	46 24 32	3382	45 1 55	3400	43 39 38	3421	42 17 45	3446
	a Arietis	E.	85 54 53	2673	84 22 0	2661	82 48 51	2648	81 15 26	2636
	Jupiter	E.	87 50 16	2818	86 16 12	2807	84 41 53	2794	83 7 17	2782
23	Sun	W.	81 20 42	3110	82 48 39	3095	84 16 55	3078	85 45 32	3060
	a Pegasi	E.	35 36 57	3647	34 19 13	3710	33 2 37	3785	31 47 19	3870
	a Arietis	E.	73 24 7	2768	71 48 57	2754	70 13 29	2740	68 37 42	2724
	Jupiter	E.	75 10 12	2715	73 33 52	2700	71 57 12	2686	70 20 13	2671
24	Sun	W.	93 13 55	2973	94 44 41	2955	96 15 50	2936	97 47 23	2919
	a Aquilæ	W.	46 23 24	4431	47 28 17	4318	48 34 53	4212	49 43 8	4115
	a Arietis	E.	60 33 43	2649	58 55 54	2632	57 17 43	2617	55 39 11	2601
	Jupiter	E.	62 10 11	2593	60 31 6	2577	58 51 39	2560	57 11 49	2544
	Aldebaran	E.	91 41 32	2681	90 4 26	2663	88 26 57	2646	86 49 5	2629
25	Sun	W.	105 31 10	2822	107 5 9	2802	108 39 34	2782	110 14 25	2763
	a Aquilæ	W.	55 46 12	3714	57 2 44	3649	58 20 26	3586	59 39 16	3528
	a Arietis	E.	47 21 6	2523	45 40 25	2509	43 59 24	2494	42 18 2	2480
	Jupiter	E.	48 46 59	2461	47 4 51	2444	45 22 19	2429	43 39 25	2413
	Aldebaran	E.	78 33 52	2543	76 53 38	2525	75 13 0	2508	73 31 58	2492
26	Sun	W.	118 15 0	2667	119 52 24	2648	121 30 14	2629	123 8 29	2612
	a Aquilæ	W.	66 28 34	3279	67 53 10	3236	69 18 36	3197	70 44 49	3160
	Fomalhaut	W.	37 28 36	3034	38 58 6	2964	40 29 5	2899	42 1 25	2842
	a Arietis	E.	33 46 35	2422	32 3 31	2413	30 20 15	2408	28 36 52	2404
	Jupiter	E.	34 59 16	2337	33 14 11	2324	31 28 47	2312	29 43 5	2300
	Aldebaran	E.	65 0 54	2410	63 17 33	2394	61 33 49	2379	59 49 44	2364
	Saturn	E.	115 4 47	2326	113 19 25	2307	111 33 36	2289	109 47 20	2270
27	Sun	W.	131 25 45	2526	133 6 22	2510	134 47 21	2495	136 28 41	2480
	a Aquilæ	W.	78 6 22	3001	79 36 33	2977	81 7 15	2953	82 38 27	2930
	Fomalhaut	W.	50 0 14	2610	51 38 56	2572	53 18 29	2538	54 58 50	2505
	Aldebaran	E.	51 4 27	2304	49 18 33	2294	47 32 25	2285	45 46 4	2279
	Pollux	E.	93 46 59	2186	91 58 10	2169	90 8 56	2154	88 19 19	2138
	Saturn	E.	100 49 25	2184	99 0 33	2168	97 11 17	2152	95 21 37	2136
28	*a* Aquilæ	W.	90 20 48	2848	91 54 10	2837	93 27 50	2828	95 1 42	2820
	Fomalhaut	W.	63 30 58	2372	65 15 13	2351	66 59 58	2331	68 45 13	2313
	a Pegasi	W.	42 40 32	2653	44 18 15	2601	45 57 8	2556	47 37 3	2515
	Aldebaran	E.	36 52 47	2276	35 6 12	2288	33 19 48	2297	31 33 44	2318
	Pollux	E.	79 5 32	2068	77 13 44	2056	75 21 37	2044	73 29 11	2033
	Saturn	E.	86 7 33	2066	84 15 41	2053	82 23 30	2042	80 31 1	2030
29	Fomalhaut	W.	77 37 29	2241	79 24 56	2231	81 12 38	2222	83 0 33	2215
	a Pegasi	W.	56 9 23	2360	57 53 55	2337	59 39 0	2317	61 24 34	2300
	Pollux	E.	64 3 3	1987	62 9 9	1980	60 15 3	1974	58 20 48	1969
	Saturn	E.	71 4 36	1985	69 10 38	1979	67 16 30	1973	65 22 12	1967
	Regulus	E.	100 50 56	1986	98 56 59	1979	97 2 51	1972	95 8 33	1967
30	Fomalhaut	W.	92 2 15	2197	93 50 47	2196	95 39 20	2199	97 27 49	2202
	a Pegasi	W.	70 18 1	2239	72 5 31	2231	73 53 12	2226	75 41 1	2223
	Pollux	E.	48 47 52	1954	46 53 5	1955	44 58 19	1955	43 3 33	1956
	Saturn	E.	55 49 9	1955	53 54 23	1955	51 59 38	1956	50 4 54	1958
	Regulus	E.	85 35 14	1961	83 40 22	1950	81 45 28	1950	79 50 35	1951

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S *Apparent* Right Ascension.	THE SUN'S Diff. for 1 hour.	THE SUN'S *Apparent* Declination.	THE SUN'S Diff. for 1 hour.	THE SUN'S Semi-diameter.	Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, *to be subtracted from* / *added to* *Apparent Time.*	Diff. for 1 hour.
		h. m. s.	s.	° ′ ″	″	′ ″	s.	m. s.	s.
Tues.	1	16 30 26.87	10.802	S.21 51 50.2	23.06	16 16.10	70.33	10 40.91	0.945
Wed.	2	16 34 46.48	10.829	22 0 51.3	22.00	16 16.25	70.41	10 17.92	0.972
Thur.	3	16 39 6.71	10.854	22 9 26.9	20.93	16 16.39	70.49	9 54.30	0.998
Fri.	4	16 43 27.56	10.878	22 17 36.8	19.86	16 16.52	70.57	9 30.08	1.023
Sat.	5	16 47 48.99	10.902	22 25 20.9	18.78	16 16.65	70.65	9 5.27	1.046
Sun.	6	16 52 10.97	10.925	22 32 38.9	17.68	16 16.77	70.72	8 39.91	1.068
Mon.	7	16 56 33.49	10.946	22 39 30.4	16.58	16 16.88	70.78	8 14.03	1.089
Tues.	8	17 0 56.51	10.967	22 45 55.2	15.47	16 16.99	70.84	7 47.64	1.110
Wed.	9	17 5 20.02	10.986	22 51 53.3	14.35	16 17.10	70.90	7 20.77	1.130
Thur.	10	17 9 43.97	11.005	22 57 24.3	13.21	16 17.20	70.96	6 53.45	1.148
Fri.	11	17 14 8.35	11.022	23 2 28.0	12.07	16 17.30	71.02	6 25.71	1.165
Sat.	12	17 18 33.13	11.037	23 7 4.2	10.93	16 17.39	71.06	5 57.56	1.181
Sun.	13	17 22 58.27	11.031	23 11 12.9	9.78	16 17.48	71.10	5 29.05	1.195
Mon.	14	17 27 23.73	11.064	23 14 53.8	8.62	16 17.57	71.14	5 0.24	1.207
Tues.	15	17 31 49.47	11.075	23 18 6.9	7.45	16 17.66	71.18	4 31.14	1.218
Wed.	16	17 36 15.45	11.085	23 20 51.9	6.28	16 17.74	71.21	4 1.79	1.228
Thur.	17	17 40 41.67	11.093	23 23 8.8	5.11	16 17.81	71.23	3 32.22	1.236
Fri.	18	17 45 8.06	11.099	23 24 57.5	3.94	16 17.88	71.25	3 2.46	1.243
Sat.	19	17 49 34.57	11.104	23 26 17.9	2.76	16 17.95	71.27	2 32.59	1.247
Sun.	20	17 54 1.17	11.108	23 27 10.1	1.58	16 18.02	71.29	2 2.63	1.249
Mon.	21	17 58 27.82	11.110	23 27 33.9	0.40	16 18.09	71.30	1 32.62	1.250
Tues.	22	18 2 54.51	11.109	23 27 29.4	0.78	16 18.15	71.30	1 2.58	1.250
Wed.	23	18 7 21.20	11.106	23 26 56.6	1.96	16 18.20	71.30	0 32.54	1.249
Thur.	24	18 11 47.82	11.102	23 25 55.3	3.14	16 18.25	71.29	0 2.55	1.247
Fri.	25	18 16 14.35	11.098	23 24 25.9	4.81	16 18.29	71.28	0 27.34	1.242
Sat.	26	18 20 40.76	11.093	23 22 28.3	5.48	16 18.32	71.27	0 57.10	1.237
Sun.	27	18 25 7.02	11.086	23 20 2.5	6.66	16 18.34	71.24	1 26.73	1.230
Mon.	28	18 29 33.11	11.079	23 17 8.6	7.82	16 18.36	71.21	1 56.18	1.222
Tues.	29	18 33 58.98	11.069	23 13 46.7	8.99	16 18.38	71.18	2 25.41	1.213
Wed.	30	18 38 24.62	11.058	23 9 57.0	10.15	16 18.40	71.15	2 54.41	1.202
Thur.	31	18 42 50.00	11.047	23 5 39.5	11.30	16 18.41	71.12	3 23.15	1.190
Fri.	32	18 47 15.05	11.034	S.23 0 54.3	12.45	16 18.41	71.08	3 51.57	1.177

Note.—Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Equation of Time, to be added to / subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		h. m. s.	s.	° ′ ″	″	m. s.	s.	h. m. s.
Tues.	1	16 30 28.79	10.802	S.21 51 54.3	23.06	10 40.74	0.945	16 41 9.53
Wed.	2	16 34 48.34	10.829	22 0 55.1	22.00	10 17.75	0.972	16 45 6.09
Thur.	3	16 39 8.50	10.854	22 9 30.4	20.93	9 54.14	0.998	16 49 2.64
Fri.	4	16 43 29.28	10.878	22 17 40.0	19.86	9 29.92	1.023	16 52 59.21
Sat.	5	16 47 50.64	10.902	22 25 23.8	18.78	9 5.12	1.046	16 56 55.76
Sun.	6	16 52 12.55	10.925	22 32 41.5	17.68	8 39.76	1.068	17 0 52.31
Mon.	7	16 56 34.99	10.946	22 39 32.7	16.58	8 13.88	1.089	17 4 48.87
Tues.	8	17 0 57.93	10.967	22 45 57.2	15.47	7 47.50	1.110	17 8 45.43
Wed.	9	17 5 21.36	10.986	22 51 55.0	14.35	7 20.63	1.130	17 12 41.99
Thur.	10	17 9 45.23	11.005	22 57 25.8	13.21	6 53.32	1.148	17 16 38.55
Fri.	11	17 14 9.53	11.022	23 2 29.3	12.07	6 25.58	1.165	17 20 35.11
Sat.	12	17 18 34.23	11.037	23 7 5.3	10.93	5 57.44	1.181	17 24 31.67
Sun.	13	17 22 59.29	11.051	23 11 13.8	9.78	5 28.94	1.195	17 28 28.23
Mon.	14	17 27 24.65	11.064	23 14 54.5	8.62	5 0.14	1.207	17 32 24.79
Tues.	15	17 31 50.30	11.075	23 18 7.4	7.45	4 31.05	1.218	17 36 21.35
Wed.	16	17 36 16.19	11.085	23 20 52.3	6.28	4 1.71	1.228	17 40 17.90
Thur.	17	17 40 42.32	11.093	23 23 9.1	5.11	3 32.14	1.236	17 44 14.46
Fri.	18	17 45 8.62	11.099	23 24 57.7	3.94	3 2.40	1.243	17 48 11.02
Sat.	19	17 49 35.04	11.104	23 26 18.0	2.76	2 32.54	1.247	17 52 7.58
Sun.	20	17 54 1.55	11.108	23 27 10.1	1.58	2 2.59	1.249	17 56 4.14
Mon.	21	17 58 28.11	11.110	23 27 33.9	0.40	1 32.59	1.250	18 0 0.70
Tues.	22	18 2 54.70	11.109	23 27 29.4	0.78	1 2.56	1.250	18 3 57.26
Wed.	23	18 7 21.29	11.106	23 26 56.6	1.96	0 32.53	1.249	18 7 53.82
Thur.	24	18 11 47.82	11.102	23 25 55.4	3.14	0 2.56	1.247	18 11 50.38
Fri.	25	18 16 14.26	11.098	23 24 26.0	4.31	0 27.32	1.242	18 15 46.94
Sat.	26	18 20 40.58	11.093	23 22 28.4	5.48	0 57.08	1.237	18 19 43.50
Sun.	27	18 25 6.75	11.086	23 20 2.7	6.66	1 26.70	1.230	18 23 40.05
Mon.	28	18 29 32.75	11.079	23 17 8.9	7.82	1 56.14	1.222	18 27 36.61
Tues.	29	18 33 58.53	11.069	23 13 47.1	8.99	1 25.36	1.213	18 31 33.17
Wed.	30	18 38 24.08	11.058	23 9 57.5	10.15	2 54.35	1.202	18 35 29.73
Thur.	31	18 42 49.37	11.047	23 5 40.1	11.30	3 23.08	1.191	18 39 26.29
Fri.	32	18 47 14.35	11.034	S.23 0 55.0	12.45	3 51.50	1.177	18 43 22.85

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S *True* LONGITUDE. λ		THE SUN'S *True* LONGITUDE. λ′			Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal 0h.		
		°	′	″	′	″	″	″			h.	m.	s.
1	335	249	18	46.2	17	59.0	152.13	+0.88	9.9936822	27.3	7	17	38.58
2	336	250	19	37.9	18	50.5	152.18	0.91	.9936179	26.2	7	13	42.67
3	337	251	20	30.8	19	43.2	152.22	0.90	.9935562	25.2	7	9	46.76
4	338	252	21	24.6	20	36.8	152.27	0.85	.9934969	24.2	7	5	50.85
5	339	253	22	19.7	21	31.7	152.32	0.79	.9934400	23.2	7	1	54.94
6	340	254	23	15.9	22	27.7	152.37	0.69	.9933855	22.2	6	57	59.02
7	341	255	24	13.3	23	24.9	152.42	0.57	.9933333	21.2	6	54	3.10
8	342	256	25	11.9	24	23.3	152.47	0.45	.9932834	20.3	6	50	7.19
9	343	257	26	11.6	25	22.9	152.52	0.32	.9932356	19.4	6	46	11.28
10	344	258	27	12.5	26	23.6	152.56	0.20	.9931899	18.6	6	42	15.37
11	345	259	28	14.5	27	25.4	152.60	+0.07	.9931461	17.8	6	38	19.45
12	346	260	29	17.5	28	28.2	152.64	—0.03	.9931041	17.1	6	34	23.54
13	347	261	30	21.5	29	32.0	152.68	0.11	.9930638	16.4	6	30	27.63
14	348	262	31	26.3	30	36.6	152.72	0.16	.9930251	15.8	6	26	31.72
15	349	263	32	31.9	31	42.0	152.75	0.20	.9929880	15.1	6	22	35.81
16	350	264	33	38.2	32	48.1	152.77	0.20	.9929525	14.5	6	18	39.89
17	351	265	34	45.0	33	54.7	152.79	0.18	.9929185	13.8	6	14	43.97
18	352	266	35	52.3	35	1.8	152.81	0.13	.9928860	13.2	6	10	48.06
19	353	267	37	0.0	36	9.3	152.83	—0.04	.9928552	12.4	6	6	52.15
20	354	268	38	8.1	37	17.3	152.84	+0.07	.9928262	11.7	6	2	56.24
21	355	269	39	16.3	38	25.3	152.85	0.18	.9927991	10.9	5	59	0.32
22	356	270	40	24.6	39	33.4	152.85	0.32	.9927739	10.0	5	55	4.40
23	357	271	41	33.1	40	41.7	152.85	0.46	.9927508	9.1	5	51	8.48
24	358	272	42	41.6	41	50.0	152.85	0.59	.9927299	8.2	5	47	12.57
25	359	273	43	50.1	42	58.3	152.85	0.71	.9927113	7.2	5	43	16.66
26	360	274	44	58.5	44	6.4	152.85	0.82	.9926951	6.2	5	39	20.74
27	361	275	46	6.9	45	14.6	152.85	0.90	.9926814	5.1	5	35	24.83
28	362	276	47	15.3	46	22.8	152.85	0.95	.9926704	4.0	5	31	28.92
29	363	277	48	23.6	47	30.9	152.85	0.97	.9926622	2.8	5	27	33.01
30	364	278	49	32.0	48	39.1	152.85	0.98	.9926568	1.6	5	23	37.10
31	365	279	50	40.4	49	47.3	152.85	0.94	.9926543	0.4	5	19	41.20
32	366	280	51	48.7	50	55.4	152.85	+0.88	9.9926547	0.7	5	15	45.28

NOTE.—λ corresponds to the *true* equinox of the date, λ′ to the *mean* equinox of Jan. 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
	′ ″	′ ″	′ ″	″	′ ″	″	h. m.	m.	d.
1	16 46.8	16 45.4	61 28.5	−0.25	61 23.0	−0.67	12 21.9	2.79	14.8
2	16 42.4	16 38.2	61 12.3	1.08	60 57.0	1.45	13 29.8	2.76	15.8
3	16 32.9	16 26.7	60 37.6	1.76	60 14.7	2.02	14 35.2	2.61	16.8
4	16 19.7	16 12.1	59 49.0	2.23	59 21.2	2.37	15 35.1	2.37	17.8
5	16 4.2	15 56.2	58 52.2	2.44	58 22.6	2.46	16 28.8	2.12	18.8
6	15 48.2	15 40.3	57 53.2	2.43	57 24.3	2.36	17 17.1	1.92	19.8
7	15 32.7	15 25.6	56 56.6	2.26	56 30.4	2.10	18 1.2	1.78	20.8
8	15 19.0	15 12.9	56 6.1	1.95	55 43.7	1.78	18 42.8	1.71	21.8
9	15 7.4	15 2.5	55 23.4	1.60	55 5.3	1.41	19 23.3	1.69	22.8
10	14 58.2	14 54.4	54 49.5	1.22	54 35.9	1.04	20 3.8	1.72	23.8
11	14 51.3	14 48.8	54 24.5	0.87	54 15.1	0.69	20 45.7	1.79	24.8
12	14 46.8	14 45.3	54 7.8	0.53	54 2.4	0.38	21 29.6	1.89	25.8
13	14 44.3	14 43.8	53 58.8	−0.23	53 56.9	−0.09	22 16.3	2.01	26.8
14	14 43.7	14 44.0	53 56.6	+0.04	53 57.8	+0.16	23 5.6	2.09	27.8
15	14 44.7	14 45.8	54 0.3	0.26	54 4.1	0.37	23 57.0	2.16	28.8
16	14 47.2	14 48.9	54 9.1	0.47	54 15.3	0.56	δ		0.0
17	14 50.8	14 53.1	54 22.7	0.66	54 31.1	0.75	0 49.2	2.17	1.0
18	14 55.7	14 58.7	54 40.7	0.85	54 51.5	0.95	1 40.9	2.12	2.0
19	15 2.0	15 5.6	55 3.5	1.05	55 16.7	1.15	2 31.0	2.04	3.0
20	15 9.5	15 13.8	55 31.1	1.26	55 46.9	1.37	3 18.8	1.95	4.0
21	15 18.4	15 23.4	56 3.9	1.47	56 22.2	1.58	4 4.5	1.88	5.0
22	15 28.8	15 34.4	56 41.8	1.68	57 2.5	1.78	4 48.9	1.84	6.0
23	15 40.3	15 46.5	57 24.4	1.86	57 47.2	1.93	5 33.0	1.86	7.0
24	15 52.9	15 59.4	58 10.7	1.97	58 34.5	1.98	6 18.1	1.93	8.0
25	16 5.9	16 12.2	58 58.3	1.96	59 21.6	1.90	7 5.8	2.07	9.0
26	16 18.3	16 24.0	59 43.9	1.80	60 4.6	1.63	7 57.5	2.27	10.0
27	16 29.0	16 33.3	60 23.1	1.41	60 38.8	1.16	8 54.7	2.49	11.0
28	16 36.6	16 38.8	60 51.0	0.85	60 59.2	+0.51	9 57.4	2.69	12.0
29	16 39.9	16 39.8	61 3.2	+0.15	61 2.8	−0.23	11 4.2	2.79	13.0
30	16 38.4	16 35.7	60 57.6	−0.62	60 48.0	0.99	12 11.6	2.74	14.0
31	16 31.9	16 27.1	60 33.9	1.33	60 16.1	1.64	13 15.6	2.55	15.0
32	16 21.2	16 14.3	59 54.6	−1.96	59 29.7	−2.23	14 14.0	2.22	16.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	4 29 56.17	2.8153	N.26 46 4.4	6.662
1	4 32 45.24	2.8203	26 52 37.8	6.451
2	4 35 34.61	2.8253	26 58 58.5	6.238
3	4 38 24.28	2.8302	27 5 6.3	6.023
4	4 41 14.24	2.8349	27 11 1.2	5.807
5	4 44 4.47	2.8394	27 16 43.1	5.590
6	4 46 54.96	2.8434	27 22 12.0	5.373
7	4 49 45.68	2.8470	27 27 27.9	5.157
8	4 52 36.60	2.8502	27 32 30.8	4.939
9	4 55 27.71	2.8531	27 37 20.6	4.718
10	4 58 18.98	2.8559	27 41 57.1	4.497
11	5 1 10.41	2.8587	27 46 20.2	4.273
12	5 4 2.01	2.8614	27 50 29.9	4.050
13	5 6 53.78	2.8640	27 54 26.2	3.828
14	5 9 45.70	2.8663	27 58 9.1	3.602
15	5 12 37.74	2.8682	28 1 38.5	3.377
16	5 15 29.88	2.8696	28 4 54.3	3.151
17	5 18 22.10	2.8709	28 7 56.5	2.923
18	5 21 14.39	2.8720	28 10 45.1	2.696
19	5 24 6.74	2.8728	28 13 20.1	2.470
20	5 26 59.13	2.8734	28 15 41.5	2.246
21	5 29 51.55	2.8737	28 17 49.5	2.020
22	5 32 43.98	2.8737	28 19 43.9	1.793
23	5 35 36.40	2.8735	N.28 21 24.7	1.566

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	5 38 28.79	2.8729	N.28 22 51.8	1.337
1	5 41 21.15	2.8722	28 24 5.1	1.108
2	5 44 13.46	2.8714	28 25 4.8	0.882
3	5 47 5.72	2.8703	28 25 50.9	0.656
4	5 49 57.90	2.8687	28 26 23.5	0.429
5	5 52 49.97	2.8667	28 26 42.5	0.203
6	5 55 41.90	2.8644	28 26 48.0	0.019
7	5 58 33.70	2.8621	28 26 40.0	0.245
8	6 1 25.36	2.8597	28 26 18.5	0.471
9	6 4 16.88	2.8573	28 25 43.5	0.698
10	6 7 8.24	2.8544	28 24 54.9	0.922
11	6 9 59.41	2.8512	28 23 52.9	1.144
12	6 12 50.38	2.8477	28 22 37.6	1.365
13	6 15 41.14	2.8440	28 21 9.1	1.585
14	6 18 31.66	2.8399	28 19 27.4	1.804
15	6 21 21.93	2.8355	28 17 32.6	2.022
16	6 24 11.92	2.8308	28 15 24.8	2.239
17	6 27 1.63	2.8260	28 13 3.9	2.457
18	6 29 51.05	2.8211	28 10 30.0	2.672
19	6 32 40.16	2.8159	28 7 43.3	2.885
20	6 35 28.96	2.8106	28 4 43.8	3.098
21	6 38 17.44	2.8052	28 1 31.5	3.311
22	6 41 5.59	2.7996	27 58 6.5	3.522
23	6 43 53.41	2.7938	27 54 28.9	3.731
24	6 46 40.87	2.7877	N.27 50 39.0	3.938

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 46 40.87	2.7877	N.27 50 39.0	3.938
1	6 49 27.95	2.7813	27 46 36.5	4.142
2	6 52 14.63	2.7745	27 42 21.8	4.346
3	6 55 0.90	2.7677	27 37 55.0	4.548
4	6 57 46.76	2.7608	27 33 16.1	4.748
5	7 0 32.20	2.7537	27 28 25.2	4.948
6	7 3 17.21	2.7465	27 23 22.4	5.147
7	7 6 1.78	2.7392	27 18 7.7	5.342
8	7 8 45.91	2.7317	27 12 41.4	5.535
9	7 11 29.58	2.7238	27 7 3.6	5.725
10	7 14 12.77	2.7157	27 1 14.4	5.916
11	7 16 55.47	2.7076	26 55 13.9	6.102
12	7 19 37.68	2.6994	26 49 2.1	6.288
13	7 22 19.40	2.6912	26 42 39.2	6.472
14	7 25 0.63	2.6829	26 36 5.4	6.654
15	7 27 41.36	2.6744	26 29 20.7	6.834
16	7 30 21.57	2.6657	26 22 25.3	7.012
17	7 33 1.25	2.6569	26 15 19.2	7.188
18	7 35 40.40	2.6481	26 8 2.8	7.359
19	7 38 19.02	2.6392	26 0 36.1	7.531
20	7 40 57.10	2.6301	25 52 59.1	7.702
21	7 43 34.63	2.6209	25 45 11.9	7.870
22	7 46 11.61	2.6117	25 37 14.7	8.035
23	7 48 48.04	2.6025	N.25 29 7.7	8.199

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	7 51 23.91	2.5931	N.25 20 50.9	8.359
1	7 53 59.21	2.5836	25 12 24.6	8.515
2	7 56 33.94	2.5741	25 3 49.0	8.672
3	7 59 8.10	2.5646	24 55 4.0	8.827
4	8 1 41.69	2.5549	24 46 9.8	8.978
5	8 4 14.71	2.5452	24 37 6.6	9.127
6	8 6 47.13	2.5355	24 27 54.6	9.274
7	8 9 18.97	2.5258	24 18 33.8	9.421
8	8 11 50.23	2.5162	24 9 4.2	9.566
9	8 14 20.91	2.5064	23 59 25.9	9.707
10	8 16 51.00	2.4966	23 49 39.3	9.845
11	8 19 20.50	2.4867	23 39 44.5	9.980
12	8 21 49.41	2.4769	23 29 41.7	10.112
13	8 24 17.73	2.4671	23 19 31.0	10.244
14	8 26 45.47	2.4573	23 9 12.4	10.375
15	8 29 12.61	2.4474	22 58 46.0	10.503
16	8 31 39.16	2.4375	22 48 12.0	10.627
17	8 34 5.11	2.4276	22 37 30.7	10.749
18	8 36 30.47	2.4178	22 26 42.1	10.870
19	8 38 55.24	2.4080	22 15 46.3	10.988
20	8 41 19.43	2.3983	22 4 43.5	11.105
21	8 43 43.03	2.3886	21 53 33.7	11.220
22	8 46 6.06	2.3790	21 42 17.1	11.332
23	8 48 28.51	2.3693	21 30 53.9	11.441
24	8 50 50.38	2.3597	N.21 19 24.2	11.548

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	8 50 50.38	2.3597	N.21 19 24.2	11.548
1	8 53 11.67	2.3500	21 7 48.1	11.654
2	8 55 32.38	2.3403	20 56 5.7	11.759
3	8 57 52.51	2.3307	20 44 17.1	11.860
4	9 0 12.07	2.3212	20 32 22.5	11.959
5	9 2 31.06	2.3118	20 20 22.0	12.057
6	9 4 49.49	2.3025	20 8 15.6	12.154
7	9 7 7.36	2.2931	19 56 3.5	12.247
8	9 9 24.66	2.2838	19 43 45.9	12.339
9	9 11 41.41	2.2746	19 31 22.8	12.428
10	9 13 57.61	2.2655	19 18 54.5	12.515
11	9 16 13.26	2.2564	19 6 21.0	12.601
12	9 18 28.37	2.2473	18 53 42.4	12.684
13	9 20 42.94	2.2383	18 40 58.9	12.766
14	9 22 56.97	2.2295	18 28 10.5	12.847
15	9 25 10.48	2.2207	18 15 17.3	12.926
16	9 27 23.46	2.2119	18 2 19.4	13.002
17	9 29 35.91	2.2031	17 49 17.0	13.076
18	9 31 47.84	2.1945	17 36 10.3	13.147
19	9 33 59.25	2.1860	17 22 59.3	13.219
20	9 36 10.16	2.1777	17 9 44.0	13.288
21	9 38 20.57	2.1694	16 56 24.7	13.355
22	9 40 30.49	2.1612	16 43 1.4	13.421
23	9 42 39.92	2.1531	N.16 29 34.2	13.485

SUNDAY 6.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	9 44 48.86	2.1450	N.16 16 3.2	13.548
1	9 46 57.32	2.1370	16 2 28.5	13.608
2	9 49 5.30	2.1290	15 48 50.2	13.668
3	9 51 12.80	2.1210	15 35 8.4	13.725
4	9 53 19.82	2.1131	15 21 23.2	13.781
5	9 55 26.37	2.1053	15 7 34.7	13.833
6	9 57 32.46	2.0977	14 53 43.1	13.886
7	9 59 38.10	2.0903	14 39 48.4	13.937
8	10 1 43.30	2.0830	14 25 50.7	13.985
9	10 3 48.06	2.0758	14 11 50.1	14.034
10	10 5 52.40	2.0687	13 57 46.6	14.082
11	10 7 56.31	2.0617	13 43 40.3	14.129
12	10 9 59.80	2.0547	13 29 31.2	14.172
13	10 12 2.87	2.0477	13 15 19.6	14.213
14	10 14 5.52	2.0408	13 1 5.6	14.252
15	10 16 7.76	2.0340	12 46 49.3	14.291
16	10 18 9.60	2.0273	12 32 30.7	14.329
17	10 20 11.04	2.0208	12 18 9.8	14.368
18	10 22 12.10	2.0143	12 3 46.7	14.402
19	10 24 12.77	2.0079	11 49 21.6	14.435
20	10 26 13.05	2.0017	11 34 54.5	14.467
21	10 28 12.97	1.9957	11 20 25.5	14.500
22	10 30 12.53	1.9897	11 5 54.6	14.529
23	10 32 11.74	1.9839	10 51 22.0	14.557
24	10 34 10.60	1.9781	N.10 36 47.7	14.585

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	10 34 10.60	1.9781	N.10 36 47.7	14.585
1	10 36 9.11	1.9723	10 22 11.8	14.610
2	10 38 7.28	1.9667	10 7 34.4	14.636
3	10 40 5.11	1.9611	9 52 55.5	14.660
4	10 42 2.60	1.9556	9 38 15.2	14.682
5	10 43 59.76	1.9501	9 23 33.6	14.703
6	10 45 56.60	1.9447	9 8 50.8	14.723
7	10 47 53.13	1.9395	8 54 6.8	14.743
8	10 49 49.35	1.9344	8 39 21.6	14.761
9	10 51 45.26	1.9294	8 24 35.4	14.780
10	10 53 40.88	1.9246	8 9 48.1	14.796
11	10 55 36.21	1.9198	7 54 59.9	14.810
12	10 57 31.25	1.9150	7 40 10.9	14.823
13	10 59 26.01	1.9103	7 25 21.1	14.836
14	11 1 20.49	1.9058	7 10 30.6	14.847
15	11 3 14.71	1.9016	6 55 39.5	14.857
16	11 5 8.68	1.8975	6 40 47.8	14.866
17	11 7 2.41	1.8934	6 25 55.6	14.873
18	11 8 55.89	1.8892	6 11 3.0	14.880
19	11 10 49.12	1.8851	5 56 10.0	14.887
20	11 12 42.10	1.8811	5 41 16.6	14.894
21	11 14 34.85	1.8773	5 26 22.7	14.900
22	11 16 27.38	1.8737	5 11 28.5	14.905
23	11 18 19.70	1.8702	N. 4 56 34.1	14.908

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	11 20 11.81	1.8667	N. 4 41 39.5	14.908
1	11 22 3.71	1.8632	4 26 45.0	14.908
2	11 23 55.40	1.8597	4 11 50.5	14.908
3	11 25 46.88	1.8564	3 56 56.0	14.908
4	11 27 38.17	1.8532	3 42 1.5	14.907
5	11 29 29.27	1.8502	3 27 7.2	14.905
6	11 31 20.19	1.8472	3 12 13.1	14.899
7	11 33 10.94	1.8444	2 57 19.3	14.894
8	11 35 1.52	1.8416	2 42 25.8	14.891
9	11 36 51.91	1.8388	2 27 32.5	14.885
10	11 38 42.16	1.8363	2 12 39.6	14.878
11	11 40 32.27	1.8339	1 57 47.1	14.871
12	11 42 22.25	1.8315	1 42 55.1	14.862
13	11 44 12.08	1.8292	1 28 3.7	14.852
14	11 46 1.76	1.8269	1 13 12.9	14.842
15	11 47 51.30	1.8246	0 58 22.7	14.832
16	11 49 40.71	1.8225	0 43 33.1	14.821
17	11 51 30.00	1.8205	0 28 44.3	14.807
18	11 53 19.17	1.8186	N. 0 13 56.3	14.792
19	11 55 8.23	1.8168	S. 0 0 50.8	14.778
20	11 56 57.19	1.8152	0 15 37.1	14.762
21	11 58 46.05	1.8136	0 30 22.5	14.746
22	12 0 34.82	1.8121	0 45 6.9	14.731
23	12 2 23.50	1.8107	0 59 50.3	14.715
24	12 4 12.10	1.8093	S. 1 14 32.7	14.699

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	12 4 12.10	1.8093	S. 1 14 32.7	14.699
1	12 6 0.62	1.8079	1 29 14.0	14.678
2	12 7 49.05	1.8066	1 43 54.1	14.656
3	12 9 37.41	1.8055	1 58 33.0	14.640
4	12 11 25.71	1.8046	2 13 10.7	14.617
5	12 13 13.96	1.8037	2 27 47.0	14.595
6	12 15 2.16	1.8029	2 42 22.1	14.573
7	12 16 50.31	1.8021	2 56 55.8	14.550
8	12 18 38.41	1.8013	3 11 28.1	14.526
9	12 20 26.47	1.8007	3 25 58.9	14.502
10	12 22 14.50	1.8002	3 40 28.3	14.478
11	12 24 2.50	1.7997	3 54 56.2	14.452
12	12 25 50.47	1.7993	4 9 22.5	14.428
13	12 27 38.42	1.7991	4 23 47.0	14.395
14	12 29 26.36	1.7989	4 38 9.9	14.368
15	12 31 14.29	1.7987	4 52 31.1	14.339
16	12 33 2.21	1.7985	5 6 50.6	14.309
17	12 34 50.12	1.7986	5 21 8.3	14.279
18	12 36 38.04	1.7987	5 35 24.3	14.248
19	12 38 25.97	1.7989	5 49 38.3	14.218
20	12 40 13.91	1.7991	6 3 50.5	14.186
21	12 42 1.86	1.7993	6 18 0.7	14.153
22	12 43 49.83	1.7997	6 32 8.9	14.119
23	12 45 37.83	1.8002	S. 6 46 15.0	14.086

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	12 47 25.86	1.8008	S. 7 0 19.0	14.049
1	12 49 13.93	1.8015	7 14 20.9	14.018
2	12 51 2.04	1.8022	7 28 20.6	13.977
3	12 52 50.19	1.8029	7 42 18.2	13.940
4	12 54 38.39	1.8038	7 56 13.6	13.902
5	12 56 26.65	1.8048	8 10 6.6	13.862
6	12 58 14.97	1.8059	8 23 57.2	13.823
7	13 0 3.36	1.8071	8 37 45.4	13.784
8	13 1 51.82	1.8082	8 51 31.2	13.745
9	13 3 40.35	1.8093	9 5 14.7	13.704
10	13 5 28.94	1.8104	9 18 55.7	13.662
11	13 7 17.60	1.8117	9 32 34.2	13.620
12	13 9 6.34	1.8131	9 46 10.1	13.576
13	13 10 55.17	1.8147	9 59 43.3	13.531
14	13 12 44.10	1.8163	10 13 13.8	13.486
15	13 14 33.13	1.8181	10 26 41.6	13.440
16	13 16 22.27	1.8199	10 40 6.6	13.393
17	13 18 11.52	1.8217	10 53 28.8	13.346
18	13 20 0.88	1.8236	11 6 48.3	13.299
19	13 21 50.35	1.8254	11 20 4.8	13.251
20	13 23 39.93	1.8272	11 33 18.4	13.202
21	13 25 29.62	1.8292	11 46 29.1	13.153
22	13 27 19.43	1.8312	11 59 36.8	13.102
23	13 29 9.37	1.8335	12 12 41.4	13.051
24	13 30 59.45	1.8356	S.12 25 42.8	12.998

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	13 30 59.45	1.8356	S.12 25 42.9	12.998
1	13 32 49.67	1.8381	12 38 41.2	12.947
2	13 34 40.03	1.8404	12 51 36.4	12.892
3	13 36 30.52	1.8427	13 4 28.3	12.838
4	13 38 21.16	1.8452	13 17 16.9	12.782
5	13 40 11.95	1.8477	13 30 2.2	12.727
6	13 42 2.89	1.8502	13 42 44.2	12.672
7	13 43 53.98	1.8529	13 55 22.8	12.614
8	13 45 45.24	1.8557	14 7 57.9	12.556
9	13 47 36.67	1.8586	14 20 29.5	12.497
10	13 49 28.27	1.8614	14 32 57.5	12.438
11	13 51 20.04	1.8643	14 45 22.0	12.378
12	13 53 11.99	1.8672	14 57 42.9	12.316
13	13 55 4.11	1.8702	15 10 0.0	12.254
14	13 56 56.41	1.8732	15 22 13.4	12.192
15	13 58 48.89	1.8762	15 34 23.1	12.130
16	14 0 41.56	1.8794	15 46 29.0	12.066
17	14 2 34.42	1.8826	15 58 31.0	11.999
18	14 4 27.47	1.8860	16 10 29.0	11.933
19	14 6 20.73	1.8893	16 22 23.1	11.867
20	14 8 14.19	1.8927	16 34 13.0	11.802
21	14 10 7.85	1.8960	16 45 59.1	11.734
22	14 12 1.71	1.8994	16 57 41.1	11.666
23	14 13 55.78	1.9028	S.17 9 19.0	11.597

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	14 15 50.05	1.9063	S.17 20 52.7	11.526
1	14 17 44.54	1.9100	17 32 22.1	11.454
2	14 19 39.25	1.9137	17 43 47.2	11.382
3	14 21 34.18	1.9173	17 55 8.0	11.310
4	14 23 29.33	1.9210	18 6 24.4	11.236
5	14 25 24.70	1.9247	18 17 36.3	11.161
6	14 27 20.30	1.9286	18 28 43.7	11.087
7	14 29 16.13	1.9324	18 39 46.6	11.010
8	14 31 12.19	1.9363	18 50 44.9	10.933
9	14 33 8.49	1.9403	19 1 38.6	10.856
10	14 35 5.03	1.9443	19 12 27.6	10.779
11	14 37 1.81	1.9483	19 23 12.0	10.700
12	14 38 58.83	1.9523	19 33 51.6	10.618
13	14 40 56.09	1.9563	19 44 26.3	10.537
14	14 42 53.59	1.9603	19 54 56.1	10.456
15	14 44 51.33	1.9644	20 5 21.0	10.373
16	14 46 49.32	1.9686	20 15 40.9	10.290
17	14 48 47.56	1.9727	20 25 55.8	10.206
18	14 50 46.05	1.9769	20 36 5.6	10.120
19	14 52 44.79	1.9811	20 46 10.2	10.033
20	14 54 43.78	1.9853	20 56 9.6	9.947
21	14 56 43.03	1.9896	21 6 3.8	9.861
22	14 58 42.53	1.9939	21 15 52.8	9.772
23	15 0 42.28	1.9982	21 25 36.4	9.682
24	15 2 42.30	2.0025	S.21 35 14.6	9.590

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	SUNDAY 13.					**TUESDAY 15.**			
	h. m. s.	s.	° ′ ″	″		h. m. s.	s.	° ′ ″	″
0	15 2 42.30	2.0025	S.21 35 14.6	9.590	0	16 43 46.13	2.2002	S.27 15 39.2	4.284
1	15 4 42.57	2.0068	21 44 47.3	9.499	1	16 45 58.24	2.2034	27 19 52.4	4.155
2	15 6 43.10	2.0112	21 54 14.5	9.407	2	16 48 10.54	2.2065	27 23 57.8	4.025
3	15 8 43.90	2.0156	22 3 36.2	9.315	3	16 50 23.02	2.2096	27 27 55.4	3.895
4	15 10 44.97	2.0200	22 12 52.3	9.222	4	16 52 35.69	2.2127	27 31 45.2	3.765
5	15 12 46.30	2.0243	22 22 2.8	9.127	5	16 54 48.55	2.2156	27 35 27.2	3.633
6	15 14 47.89	2.0287	22 31 7.6	9.032	6	16 57 1.59	2.2187	27 39 1.2	3.502
7	15 16 49.75	2.0332	22 40 6.7	8.936	7	16 59 14.80	2.2215	27 42 27.4	3.370
8	15 18 51.87	2.0377	22 48 59.9	8.838	8	17 1 28.17	2.2243	27 45 45.6	3.237
9	15 20 54.26	2.0420	22 57 47.3	8.741	9	17 3 41.71	2.2269	27 48 55.8	3.104
10	15 22 56.91	2.0462	23 6 28.8	8.642	10	17 5 55.40	2.2294	27 51 58.0	2.969
11	15 24 59.81	2.0505	23 15 4.3	8.542	11	17 8 9.24	2.2319	27 54 52.1	2.836
12	15 27 2.97	2.0549	23 23 33.8	8.442	12	17 10 23.23	2.2344	27 57 38.1	2.700
13	15 29 6.40	2.0594	23 31 57.3	8.340	13	17 12 37.37	2.2368	28 0 16.1	2.565
14	15 31 10.10	2.0639	23 40 14.6	8.237	14	17 14 51.65	2.2391	28 2 45.9	2.428
15	15 33 14.07	2.0684	23 48 25.8	8.136	15	17 17 6.07	2.2413	28 5 7.5	2.292
16	15 35 18.31	2.0728	23 56 30.9	8.032	16	17 19 20.62	2.2436	28 7 20.9	2.155
17	15 37 22.81	2.0772	24 4 29.6	7.926	17	17 21 35.30	2.2456	28 9 26.1	2.019
18	15 39 27.57	2.0815	24 12 22.0	7.821	18	17 23 50.09	2.2474	28 11 23.2	1.882
19	15 41 32.59	2.0857	24 20 8.1	7.714	19	17 26 4.99	2.2492	28 13 12.0	1.744
20	15 43 37.88	2.0903	24 27 47.7	7.607	20	17 28 20.00	2.2512	28 14 52.5	1.606
21	15 45 43.43	2.0947	24 35 21.0	7.498	21	17 30 35.13	2.2530	28 16 24.7	1.468
22	15 47 49.24	2.0990	24 42 47.6	7.392	22	17 32 50.36	2.2546	28 17 48.6	1.328
23	15 49 55.31	2.1032	S.24 50 7.8	7.281	23	17 35 5.68	2.2561	S.28 19 4.1	1.188
	MONDAY 14.					**WEDNESDAY 16.**			
0	15 52 1.63	2.1075	S.24 57 21.3	7.169	0	17 37 21.09	2.2575	S.28 20 11.2	1.050
1	15 54 8.21	2.1118	25 4 28.1	7.057	1	17 39 36.58	2.2587	28 21 10.0	0.910
2	15 56 15.05	2.1162	25 11 28.2	6.946	2	17 41 52.14	2.2599	28 22 0.4	0.776
3	15 58 22.15	2.1204	25 18 21.6	6.833	3	17 44 7.77	2.2611	28 22 42.4	0.630
4	16 0 29.50	2.1246	25 25 8.2	6.718	4	17 46 23.47	2.2622	28 23 16.0	0.490
5	16 2 37.10	2.1287	25 31 47.9	6.604	5	17 48 39.24	2.2633	28 23 41.2	0.348
6	16 4 44.94	2.1327	25 38 20.7	6.488	6	17 50 55.07	2.2642	28 23 57.9	0.210
7	16 6 53.02	2.1367	25 44 46.5	6.372	7	17 53 10.95	2.2650	28 24 6.3	0.069
8	16 9 1.35	2.1409	25 51 5.3	6.255	8	17 55 26.87	2.2657	28 24 6.2	0.072
9	16 11 9.93	2.1451	25 57 17.1	6.138	9	17 57 42.83	2.2662	28 23 57.6	0.214
10	16 13 18.76	2.1492	26 3 21.9	6.020	10	17 59 58.82	2.2667	28 23 40.5	0.356
11	16 15 27.83	2.1531	26 9 19.6	5.901	11	18 2 14.84	2.2671	28 23 14.9	0.499
12	16 17 37.13	2.1569	26 15 10.0	5.781	12	18 4 30.88	2.2675	28 22 40.7	0.639
13	16 19 46.66	2.1607	26 20 53.2	5.659	13	18 6 46.94	2.2678	28 21 58.1	0.781
14	16 21 56.42	2.1646	26 26 29.1	5.537	14	18 9 3.02	2.2680	28 21 7.0	0.922
15	16 24 6.41	2.1684	26 31 57.7	5.416	15	18 11 19.10	2.2680	28 20 7.4	1.062
16	16 26 16.63	2.1722	26 37 19.0	5.293	16	18 13 35.18	2.2680	28 18 59.4	1.204
17	16 28 27.07	2.1758	26 42 32.9	5.169	17	18 15 51.26	2.2679	28 17 42.9	1.346
18	16 30 37.73	2.1796	26 47 39.3	5.044	18	18 18 7.33	2.2678	28 16 17.9	1.488
19	16 32 48.61	2.1831	26 52 38.3	4.919	19	18 20 23.38	2.2674	28 14 44.4	1.631
20	16 34 59.70	2.1866	26 57 29.7	4.793	20	18 22 39.41	2.2669	28 13 2.5	1.772
21	16 37 11.00	2.1901	27 2 13.5	4.667	21	18 24 55.41	2.2664	28 11 12.1	1.914
22	16 39 22.51	2.1935	27 6 49.7	4.540	22	18 27 11.38	2.2659	28 9 13.2	2.055
23	16 41 34.22	2.1969	27 11 18.3	4.412	23	18 29 27.32	2.2653	28 7 5.9	2.196
24	16 43 46.13	2.2002	S.27 15 39.2	4.284	24	18 31 43.22	2.2646	S.28 4 50.2	2.335

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	18 31 43.22	2.2646	S.28 4 50.2	2.335
1	18 33 59.07	2.2637	28 2 25.9	2.475
2	18 36 14.86	2.2627	27 59 53.2	2.615
3	18 38 30.59	2.2616	27 57 12.1	2.755
4	18 40 46.25	2.2604	27 54 22.6	2.894
5	18 43 1.85	2.2591	27 51 24.8	3.033
6	18 45 17.37	2.2578	27 48 18.6	3.173
7	18 47 32.80	2.2565	27 45 4.0	3.312
8	18 49 48.15	2.2551	27 41 41.1	3.451
9	18 52 3.41	2.2536	27 38 9.9	3.591
10	18 54 18.58	2.2521	27 34 30.3	3.730
11	18 56 33.66	2.2505	27 30 42.4	3.868
12	18 58 48.64	2.2487	27 26 46.2	4.005
13	19 1 3.51	2.2468	27 22 41.8	4.142
14	19 3 18.26	2.2448	27 18 29.2	4.280
15	19 5 32.89	2.2427	27 14 8.3	4.416
16	19 7 47.39	2.2406	27 9 39.3	4.551
17	19 10 1.76	2.2385	27 5 2.2	4.689
18	19 12 16.00	2.2364	27 0 16.9	4.822
19	19 14 30.12	2.2342	26 55 23.5	4.956
20	19 16 44.10	2.2318	26 50 22.1	5.091
21	19 18 57.94	2.2292	26 45 12.6	5.225
22	19 21 11.62	2.2267	26 39 55.1	5.358
23	19 23 25.15	2.2242	S.26 34 29.6	5.491

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	19 25 38.53	2.2217	S.26 28 56.2	5.622
1	19 27 51.76	2.2192	26 23 14.9	5.754
2	19 30 4.83	2.2165	26 17 25.7	5.886
3	19 32 17.74	2.2137	26 11 28.6	6.017
4	19 34 30.48	2.2109	26 5 23.7	6.146
5	19 36 43.05	2.2081	25 59 11.1	6.276
6	19 38 55.45	2.2052	25 52 50.7	6.404
7	19 41 7.68	2.2023	25 46 22.6	6.532
8	19 43 19.73	2.1992	25 39 46.8	6.661
9	19 45 31.59	2.1960	25 33 3.3	6.787
10	19 47 43.26	2.1928	25 26 12.3	6.912
11	19 49 54.73	2.1896	25 19 13.8	7.038
12	19 52 6.01	2.1864	25 12 7.8	7.162
13	19 54 17.10	2.1832	25 4 54.4	7.286
14	19 56 28.01	2.1800	24 57 33.5	7.410
15	19 58 38.72	2.1768	24 50 5.2	7.533
16	20 0 49.23	2.1735	24 42 29.5	7.656
17	20 2 59.54	2.1702	24 34 46.4	7.779
18	20 5 9.65	2.1668	24 26 56.0	7.901
19	20 7 19.56	2.1635	24 18 58.3	8.021
20	20 9 29.27	2.1602	24 10 53.5	8.138
21	20 11 38.77	2.1566	24 2 41.7	8.255
22	20 13 48.06	2.1531	23 54 22.9	8.372
23	20 15 57.14	2.1496	23 45 57.1	8.490
24	20 18 6.01	2.1461	S.23 37 24.2	8.607

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	20 18 6.01	2.1461	S.23 37 24.2	8.607
1	20 20 14.67	2.1425	23 28 44.3	8.722
2	20 22 23.11	2.1388	23 19 57.5	8.837
3	20 24 31.33	2.1352	23 11 3.8	8.950
4	20 26 39.33	2.1315	23 2 3.4	9.063
5	20 28 47.11	2.1278	22 52 56.2	9.176
6	20 30 54.67	2.1242	22 43 42.3	9.287
7	20 33 2.02	2.1207	22 34 21.8	9.397
8	20 35 9.16	2.1172	22 24 54.7	9.507
9	20 37 16.09	2.1136	22 15 21.0	9.617
10	20 39 22.81	2.1101	22 5 40.8	9.726
11	20 41 29.31	2.1065	21 55 54.0	9.833
12	20 43 35.59	2.1029	21 46 0.8	9.939
13	20 45 41.66	2.0993	21 36 1.3	10.043
14	20 47 47.51	2.0957	21 25 55.6	10.147
15	20 49 53.15	2.0922	21 15 43.6	10.251
16	20 51 58.58	2.0887	21 5 25.4	10.355
17	20 54 3.79	2.0850	20 55 1.0	10.456
18	20 56 8.78	2.0813	20 44 30.5	10.558
19	20 58 13.55	2.0778	20 33 54.0	10.656
20	21 0 18.11	2.0744	20 23 11.5	10.757
21	21 2 22.48	2.0711	20 12 23.0	10.858
22	21 4 26.64	2.0677	20 1 28.6	10.957
23	21 6 30.60	2.0642	S.19 50 28.3	11.053

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	21 8 34.35	2.0607	S.19 39 22.2	11.149
1	21 10 37.89	2.0572	19 28 10.4	11.244
2	21 12 41.22	2.0538	19 16 52.9	11.339
3	21 14 44.35	2.0505	19 5 29.7	11.433
4	21 16 47.28	2.0473	18 54 0.9	11.524
5	21 18 50.02	2.0439	18 42 26.7	11.616
6	21 20 52.55	2.0407	18 30 47.0	11.707
7	21 22 54.89	2.0375	18 19 1.9	11.797
8	21 24 57.05	2.0343	18 7 11.4	11.887
9	21 26 59.01	2.0311	17 55 15.5	11.976
10	21 29 0.78	2.0279	17 43 14.3	12.065
11	21 31 2.36	2.0249	17 31 7.8	12.151
12	21 33 3.76	2.0218	17 18 56.2	12.237
13	21 35 4.98	2.0188	17 6 39.6	12.319
14	21 37 6.02	2.0158	16 54 17.9	12.404
15	21 39 6.88	2.0129	16 41 51.1	12.488
16	21 41 7.57	2.0101	16 29 19.3	12.573
17	21 43 8.09	2.0072	16 16 42.6	12.650
18	21 45 8.44	2.0044	16 4 1.2	12.733
19	21 47 8.62	2.0017	15 51 14.9	12.812
20	21 49 8.64	1.9990	15 38 23.8	12.889
21	21 51 8.50	1.9964	15 25 28.1	12.967
22	21 53 8.21	1.9939	15 12 27.8	13.042
23	21 55 7.77	1.9914	14 59 23.0	13.117
24	21 57 7.18	1.9889	S.14 46 13.7	13.193

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	21 57 7.18	1.9889	S.14 46 13.7	13.192
1	21 59 6.44	1.9864	14 32 59.9	13.267
2	22 1 5.55	1.9840	14 19 41.6	13.342
3	22 3 4.52	1.9817	14 6 18.9	13.414
4	22 5 3.35	1.9794	13 52 51.9	13.486
5	22 7 2.05	1.9771	13 39 20.6	13.557
6	22 9 0.61	1.9749	13 25 45.1	13.626
7	22 10 59.04	1.9729	13 12 5.5	13.694
8	22 12 57.36	1.9710	12 58 21.8	13.762
9	22 14 55.56	1.9691	12 44 34.0	13.830
10	22 16 53.65	1.9672	12 30 42.2	13.894
11	22 18 51.63	1.9653	12 16 46.6	13.959
12	22 20 49.50	1.9635	12 2 47.1	14.025
13	23 22 47.26	1.9619	11 48 43.7	14.088
14	22 24 44.93	1.9603	11 34 36.5	14.151
15	22 26 42.50	1.9588	11 20 25.6	14.212
16	22 28 39.98	1.9574	11 6 10.9	14.272
17	22 30 37.37	1.9559	10 51 52.8	14.332
18	22 32 34.67	1.9544	10 37 31.3	14.389
19	22 34 31.89	1.9531	10 23 6.2	14.447
20	22 36 29.04	1.9519	10 8 37.6	14.506
21	22 38 26.12	1.9507	9 54 5.5	14.563
22	22 40 23.13	1.9497	9 39 30.0	14.618
23	22 42 20.08	1.9487	S. 9 24 51.2	14.672

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	22 44 16.97	1.9477	S. 9 10 9.3	14.724
1	22 46 13.80	1.9467	8 55 24.3	14.776
2	22 48 10.58	1.9460	8 40 36.2	14.828
3	22 50 7.32	1.9456	8 25 45.0	14.879
4	22 52 4.04	1.9451	8 10 50.7	14.930
5	22 54 0.73	1.9446	7 55 53.3	14.981
6	22 55 57.39	1.9441	7 40 53.0	15.028
7	22 57 54.02	1.9436	7 25 50.0	15.073
8	22 59 50.62	1.9430	7 10 44.2	15.119
9	23 1 47.19	1.9428	6 55 35.7	15.164
10	23 3 43.76	1.9428	6 40 24.5	15.208
11	23 5 40.33	1.9428	6 25 10.7	15.252
12	23 7 36.90	1.9429	6 9 54.3	15.295
13	23 9 33.48	1.9430	5 54 35.3	15.337
14	23 11 30.06	1.9431	5 39 13.9	15.377
15	23 13 26.65	1.9433	5 23 50.1	15.416
16	23 15 23.26	1.9437	5 8 24.1	15.453
17	23 17 19.89	1.9441	4 52 55.7	15.490
18	23 19 16.55	1.9447	4 37 25.2	15.526
19	23 21 13.25	1.9453	4 21 52.6	15.561
20	23 23 9.99	1.9460	4 6 17.9	15.598
21	23 25 6.77	1.9469	3 50 41.1	15.632
22	23 27 3.61	1.9478	3 35 2.2	15.664
23	23 29 0.50	1.9487	3 19 21.4	15.695
24	23 30 57.45	1.9497	S. 3 3 38.8	15.725

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	23 30 57.45	1.9497	S. 3 3 38.8	15.725
1	23 32 54.47	1.9509	2 47 54.4	15.755
2	23 34 51.56	1.9521	2 32 8.2	15.784
3	23 36 48.72	1.9534	2 16 20.3	15.810
4	23 38 45.96	1.9548	2 0 30.9	15.836
5	23 40 43.29	1.9564	1 44 40.0	15.861
6	23 42 40.72	1.9581	1 28 47.6	15.885
7	23 44 38.26	1.9598	1 12 53.8	15.908
8	23 46 35.90	1.9616	0 56 58.6	15.932
9	23 48 33.65	1.9634	0 41 2.0	15.953
10	23 50 31.51	1.9652	0 25 4.2	15.973
11	23 52 29.48	1.9672	S. 0 9 5.2	15.992
12	23 54 27.57	1.9693	N. 0 6 54.9	16.010
13	23 56 25.80	1.9717	0 22 56.0	16.027
14	23 58 24.18	1.9742	0 38 58.1	16.041
15	0 0 22.71	1.9767	0 55 1.0	16.055
16	0 2 21.39	1.9792	1 11 4.7	16.067
17	0 4 20.21	1.9817	1 27 9.1	16.079
18	0 6 19.19	1.9844	1 43 14.2	16.090
19	0 8 18.34	1.9872	1 59 19.9	16.100
20	0 10 17.67	1.9903	2 15 26.2	16.109
21	0 12 17.18	1.9934	2 31 33.0	16.118
22	0 14 16.88	1.9966	2 47 40.3	16.124
23	0 16 16.77	1.9997	N. 3 3 47.9	16.128

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	0 18 16.85	2.0030	N. 3 19 55.7	16.132
1	0 20 17.13	2.0064	3 36 3.7	16.134
2	0 22 17.62	2.0099	3 52 11.8	16.136
3	0 24 18.32	2.0135	4 8 20.0	16.136
4	0 26 19.24	2.0172	4 24 28.1	16.134
5	0 28 20.39	2.0212	4 40 36.0	16.131
6	0 30 21.78	2.0252	4 56 43.7	16.127
7	0 32 23.41	2.0292	5 12 51.2	16.123
8	0 34 25.28	2.0333	5 28 58.4	16.118
9	0 36 27.40	2.0375	5 45 5.4	16.111
10	0 38 29.78	2.0419	6 1 11.9	16.102
11	0 40 32.43	2.0464	6 17 17.7	16.091
12	0 42 35.35	2.0509	6 33 22.8	16.078
13	0 44 38.54	2.0555	6 49 27.1	16.065
14	0 46 42.01	2.0602	7 5 30.6	16.053
15	0 48 45.76	2.0649	7 21 33.3	16.038
16	0 50 49.80	2.0699	7 37 35.0	16.017
17	0 52 54.15	2.0751	7 53 35.4	15.996
18	0 54 58.81	2.0802	8 9 34.5	15.974
19	0 57 3.78	2.0854	8 25 32.3	15.952
20	0 59 9.06	2.0908	8 41 28.8	15.930
21	1 1 14.67	2.0962	8 57 23.9	15.905
22	1 3 20.60	2.1016	9 13 17.4	15.877
23	1 5 26.86	2.1072	9 29 9.2	15.850
24	1 7 33.46	2.1129	N. 9 44 59.3	15.820

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	1 7 33.46	2.1129	N. 9 44 59.3	15.820
1	1 9 40.41	2.1187	10 0 47.6	15.789
2	1 11 47.71	2.1247	10 16 34.0	15.755
3	1 13 55.37	2.1308	10 32 18.3	15.721
4	1 16 3.41	2.1371	10 48 0.5	15.684
5	1 18 11.82	2.1433	11 3 40.4	15.645
6	1 20 20.61	2.1497	11 19 17.9	15.605
7	1 22 29.78	2.1562	11 34 53.0	15.564
8	1 24 39.33	2.1623	11 50 25.6	15.522
9	1 26 49.27	2.1690	12 5 55.6	15.478
10	1 28 59.61	2.1758	12 21 22.9	15.431
11	1 31 10.36	2.1826	12 36 47.3	15.383
12	1 33 21.52	2.1896	12 52 8.8	15.331
13	1 35 33.10	2.1967	13 7 27.1	15.279
14	1 37 45.11	2.2037	13 22 42.3	15.227
15	1 39 57.54	2.2107	13 37 54.3	15.172
16	1 42 10.39	2.2177	13 53 3.0	15.116
17	1 44 23.67	2.2250	14 8 8.2	15.056
18	1 46 37.39	2.2324	14 23 9.7	14.993
19	1 48 51.56	2.2400	14 38 7.4	14.929
20	1 51 6.19	2.2477	14 53 1.2	14.864
21	1 53 21.29	2.2554	15 7 51.1	14.797
22	1 55 36.85	2.2632	15 22 36.9	14.730
23	1 57 52.88	2.2711	N.15 37 18.6	14.659

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	2 0 9.38	2.2790	N.15 51 56.0	14.584
1	2 2 26.36	2.2870	16 6 28.8	14.508
2	2 4 43.82	2.2950	16 20 57.0	14.432
3	2 7 1.76	2.3031	16 35 20.6	14.354
4	2 9 20.19	2.3111	16 49 39.5	14.274
5	2 11 39.10	2.3193	17 3 53.5	14.191
6	2 13 58.50	2.3277	17 18 2.4	14.107
7	2 16 18.41	2.3361	17 32 6.2	14.017
8	2 18 38.83	2.3447	17 46 4.6	13.927
9	2 20 59.77	2.3533	17 59 57.5	13.835
10	2 23 21.23	2.3620	18 13 44.8	13.741
11	2 25 43.21	2.3708	18 27 26.4	13.644
12	2 28 5.72	2.3794	18 41 2.1	13.547
13	2 30 28.74	2.3880	18 54 31.9	13.446
14	2 32 52.28	2.3965	19 7 55.6	13.343
15	2 35 16.33	2.4052	19 21 13.1	13.237
16	2 37 40.91	2.4141	19 34 24.2	13.132
17	2 40 6.02	2.4229	19 47 28.9	13.029
18	2 42 31.67	2.4317	20 0 26.9	12.910
19	2 44 57.84	2.4406	20 13 18.1	12.794
20	2 47 24.54	2.4496	20 26 2.3	12.679
21	2 49 51.79	2.4587	20 38 39.6	12.562
22	2 52 19.58	2.4678	20 51 9.8	12.442
23	2 54 47.92	2.4768	21 3 32.7	12.319
24	2 57 16.80	2.4856	N.21 15 48.1	12.192

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	2 57 16.80	2.4856	N.21 15 48.1	12.192
1	2 59 46.22	2.4947	21 27 55.8	12.065
2	3 2 16.17	2.5036	21 39 55.8	11.935
3	3 4 46.65	2.5125	21 51 48.0	11.802
4	3 7 17.67	2.5215	22 3 32.2	11.668
5	3 9 49.23	2.5305	22 15 8.2	11.531
6	3 12 21.33	2.5395	22 26 35.9	11.392
7	3 14 53.97	2.5485	22 37 55.2	11.251
8	3 17 27.15	2.5575	22 49 6.0	11.107
9	3 20 0.87	2.5665	23 0 8.0	10.962
10	3 22 35.12	2.5752	23 11 1.4	10.813
11	3 25 9.90	2.5841	23 21 45.6	10.662
12	3 27 45.21	2.5931	23 32 20.8	10.510
13	3 30 21.06	2.6018	23 42 46.8	10.356
14	3 32 57.43	2.6103	23 53 3.4	10.198
15	3 35 34.31	2.6189	24 3 10.5	10.038
16	3 38 11.70	2.6274	24 13 8.0	9.877
17	3 40 49.60	2.6359	24 22 55.7	9.712
18	3 43 28.01	2.6444	24 32 33.4	9.544
19	3 46 6.93	2.6528	24 42 1.0	9.376
20	3 48 46.35	2.6612	24 51 18.5	9.207
21	3 51 26.27	2.6694	25 0 25.8	9.035
22	3 54 6.68	2.6772	25 9 22.7	8.860
23	3 56 47.55	2.6851	N.25 18 9.0	8.682

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	3 59 28.89	2.6927	N.25 26 44.6	8.503
1	4 2 10.70	2.7007	25 35 9.4	8.322
2	4 4 52.98	2.7085	25 43 23.3	8.141
3	4 7 35.72	2.7161	25 51 26.3	7.957
4	4 10 18.91	2.7237	25 59 18.2	7.771
5	4 13 2.55	2.7309	26 6 58.8	7.580
6	4 15 46.62	2.7380	26 14 27.9	7.389
7	4 18 31.11	2.7449	26 21 45.5	7.196
8	4 21 16.01	2.7517	26 28 51.4	7.001
9	4 24 1.31	2.7582	26 35 45.6	6.806
10	4 26 47.00	2.7645	26 42 28.0	6.607
11	4 29 33.06	2.7708	26 48 58.5	6.408
12	4 32 19.49	2.7768	26 55 17.1	6.207
13	4 35 6.28	2.7828	27 1 23.5	6.004
14	4 37 53.43	2.7888	27 7 17.6	5.799
15	4 40 40.93	2.7945	27 12 59.4	5.593
16	4 43 28.77	2.8000	27 18 28.8	5.387
17	4 46 16.93	2.8052	27 23 45.8	5.178
18	4 49 5.39	2.8099	27 28 50.2	4.967
19	4 51 54.13	2.8147	27 33 41.9	4.756
20	4 54 43.15	2.8192	27 38 20.9	4.542
21	4 57 32.44	2.8238	27 42 47.0	4.328
22	5 0 22.00	2.8281	27 47 0.3	4.116
23	5 3 11.81	2.8322	27 51 0.8	3.899
24	5 6 1.86	2.8360	N.27 54 48.2	3.681

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	5 6 1.86	2.8360	N.27 54 48.2	3.681
1	5 8 52.13	2.8398	27 58 22.5	3.462
2	5 11 42.59	2.8424	28 1 43.7	3.244
3	5 14 33.22	2.8452	28 4 51.8	3.025
4	5 17 24.01	2.8477	28 7 46.7	2.804
5	5 20 14.95	2.8501	28 10 28.3	2.584
6	5 23 6.03	2.8523	28 12 56.7	2.362
7	5 25 57.23	2.8543	28 15 11.7	2.138
8	5 28 48.56	2.8565	28 17 13.3	1.915
9	5 31 40.01	2.8583	28 19 1.5	1.691
10	5 34 31.56	2.8596	28 20 36.2	1.464
11	5 37 23.17	2.8606	28 21 57.3	1.240
12	5 40 14.83	2.8615	28 23 5.0	1.015
13	5 43 6.54	2.8620	28 23 59.3	0.792
14	5 45 58.27	2.8622	28 24 40.2	0.571
15	5 48 50.00	2.8620	28 25 7.7	0.346
16	5 51 41.71	2.8616	28 25 21.7	0.119
17	5 54 33.39	2.8609	28 25 22.1	0.107
18	5 57 25.02	2.8600	28 25 9.0	0.332
19	6 0 16.59	2.8592	28 24 42.4	0.557
20	6 3 8.11	2.8581	28 24 2.3	0.780
21	6 5 59.56	2.8566	28 23 8.8	1.003
22	6 8 50.91	2.8549	28 22 1.9	1.227
23	6 11 42.15	2.8529	N.28 20 41.6	1.449

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	6 14 33.26	2.8506	N.28 19 8.0	1.671
1	6 17 24.22	2.8479	28 17 21.1	1.892
2	6 20 15.01	2.8451	28 15 20.9	2.114
3	6 23 5.63	2.8421	28 13 7.4	2.335
4	6 25 56.06	2.8387	28 10 40.7	2.554
5	6 28 46.28	2.8352	28 8 0.9	2.772
6	6 31 36.28	2.8314	28 5 8.0	2.991
7	6 34 26.05	2.8275	28 2 2.0	3.208
8	6 37 15.58	2.8235	27 58 43.0	3.423
9	6 40 4.87	2.8192	27 55 11.2	3.636
10	6 42 53.88	2.8143	27 51 26.7	3.847
11	6 45 42.59	2.8092	27 47 29.5	4.059
12	6 48 30.99	2.8041	27 43 19.6	4.270
13	6 51 19.08	2.7988	27 38 57.1	4.480
14	6 54 6.85	2.7934	27 34 22.0	4.689
15	6 56 54.29	2.7878	27 29 34.4	4.897
16	6 59 41.39	2.7820	27 24 34.4	5.102
17	7 2 28.13	2.7759	27 19 22.1	5.305
18	7 5 14.50	2.7695	27 13 57.8	5.507
19	7 8 0.48	2.7631	27 8 21.4	5.707
20	7 10 46.07	2.7564	27 2 33.0	5.906
21	7 13 31.25	2.7495	26 56 32.7	6.102
22	7 16 16.01	2.7423	26 50 20.7	6.297
23	7 19 0.34	2.7352	26 43 57.1	6.490
24	7 21 44.24	2.7282	N.26 37 21.9	6.682

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
	h. m. s.	s.	° ′ ″	″
0	7 21 44.24	2.7282	N.26 37 21.9	6.682
1	7 24 27.71	2.7207	26 30 35.4	6.870
2	7 27 10.73	2.7132	26 23 37.5	7.059
3	7 29 53.29	2.7053	26 16 28.3	7.246
4	7 32 35.37	2.6974	26 9 8.0	7.429
5	7 35 16.97	2.6891	26 1 36.8	7.610
6	7 37 58.07	2.6811	25 53 54.8	7.789
7	7 40 38.69	2.6729	25 46 2.1	7.967
8	7 43 18.82	2.6645	25 37 58.8	8.142
9	7 45 58.45	2.6560	25 29 45.0	8.317
10	7 48 37.56	2.6474	25 21 20.8	8.488
11	7 51 16.14	2.6385	25 12 46.4	8.657
12	7 53 54.19	2.6297	25 4 2.0	8.822
13	7 56 31.71	2.6210	24 55 7.7	8.987
14	7 59 8.71	2.6122	24 46 3.5	9.150
15	8 1 45.18	2.6033	24 36 49.6	9.312
16	8 4 21.11	2.5942	24 27 26.1	9.468
17	8 6 56.48	2.5848	24 17 53.3	9.623
18	8 9 31.29	2.5754	24 8 11.3	9.777
19	8 12 5.54	2.5662	23 58 20.1	9.928
20	8 14 39.24	2.5571	23 48 19.9	10.078
21	8 17 12.39	2.5477	23 38 10.7	10.225
22	8 19 44.98	2.5385	23 27 52.9	10.368
23	8 22 17.01	2.5292	N.23 17 26.5	10.511

FRIDAY, JAN. 1, 1858.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
0	8 24 48.49	2.5199	N.23 6 51.6	10.654

PHASES OF THE MOON.

	Day.	h.	m.
☾ Last Quarter, . .	7	18	38.3
● New Moon, . .	15	23	1.6
☽ First Quarter, .	23	18	36.5
○ Full Moon, . .	30	9	33.6

	Day.	h.
☾ Apogee, ...	13	20
☾ Perigee, ...	29	5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	*a* Pegasi	W.	77 28 54	2220	79 16 51	2219	81 4 50	2220	82 52 48	2223
	a Arietis	W.	34 19 29	2039	36 12 3	2033	38 4 45	2031	39 57 31	2029
	Jupiter	W.	33 0 40	1972	34 54 58	1971	36 49 18	1970	38 43 39	1972
	Pollux	E.	41 8 49	1959	39 14 10	1962	37 19 35	1967	35 25 8	1972
	Saturn	E.	48 10 13	1960	46 15 36	1966	44 21 6	1970	42 26 44	1976
	Regulus	E.	77 55 44	1953	76 0 56	1956	74 6 12	1960	72 11 34	1964
	Mars	E.	118 40 40	2124	116 50 18	2127	115 0 0	2131	113 9 48	2136
2	*a* Arietis	W.	49 21 9	2044	51 13 35	2050	53 5 51	2057	54 57 56	2066
	Jupiter	W.	48 14 16	1994	50 7 59	2002	52 1 30	2010	53 54 48	2020
	Aldebaran	W.	20 19 45	2607	21 58 30	2522	23 39 12	2460	25 21 22	2412
	Saturn	E.	32 57 50	2023	31 4 52	2037	29 12 15	2052	27 20 2	2069
	Regulus	E.	62 40 31	1997	60 46 52	2007	58 53 28	2016	57 0 19	2026
	Mars	E.	104 0 51	2169	102 11 36	2178	100 22 36	2189	98 33 52	2199
3	*a* Arietis	W.	64 14 39	2120	66 5 7	2134	67 55 15	2147	69 45 2	2162
	Jupiter	W.	63 17 14	2077	65 8 48	2092	67 0 0	2105	68 50 51	2120
	Aldebaran	W.	34 4 25	2308	35 50 13	2303	37 36 8	2302	39 22 5	2302
	Regulus	E.	47 38 59	2089	45 47 43	2103	43 56 49	2118	42 6 17	2134
	Mars	E.	89 34 31	2264	87 47 38	2279	86 1 7	2294	84 14 58	2309
	Spica	E.	101 38 28	2086	99 47 7	2099	97 56 7	2115	96 5 30	2130
4	*a* Arietis	W.	78 48 17	2241	80 35 43	2258	82 22 44	2277	84 9 18	2294
	Jupiter	W.	77 59 16	2200	79 47 43	2218	81 35 44	2236	83 23 18	2254
	Aldebaran	W.	48 10 28	2337	49 55 34	2348	51 40 24	2360	53 24 56	2373
	Regulus	E.	32 59 46	2218	31 11 46	2237	29 24 13	2256	27 37 8	2274
	Mars	E.	75 30 14	2396	73 46 33	2415	72 3 19	2433	70 20 31	2451
	Spica	E.	86 58 23	2211	85 10 12	2229	83 22 27	2247	81 35 9	2265
	Sun	E.	137 7 53	2563	135 28 7	2580	133 48 45	2598	132 9 47	2615
5	Jupiter	W.	92 14 24	2347	93 59 15	2366	95 43 38	2386	97 27 33	2405
	Aldebaran	W.	62 2 35	2448	63 45 1	2465	65 27 4	2482	67 8 43	2499
	Pollux	W.	18 13 7	2389	19 56 58	2404	21 40 27	2419	23 23 34	2436
	Mars	E.	61 53 20	2551	60 13 17	2571	58 33 41	2591	56 54 34	2611
	Spica	E.	72 45 28	2358	71 0 53	2378	69 16 47	2397	67 33 8	2416
	Sun	E.	124 1 12	2711	122 24 47	2732	120 48 49	2750	119 13 16	2770
6	Jupiter	W.	106 0 17	2502	107 41 28	2521	109 22 12	2540	111 2 30	2559
	Aldebaran	W.	75 30 56	2587	77 10 9	2604	78 48 58	2623	80 27 22	2640
	Pollux	W.	31 53 13	2523	33 33 54	2540	35 14 11	2559	36 54 3	2577
	Saturn	W.	25 24 12	2554	27 4 10	2566	28 43 51	2580	30 23 14	2594
	Mars	E.	48 45 52	2713	47 9 30	2734	45 33 35	2754	43 58 7	2776
	Spica	E.	59 1 39	2512	57 20 42	2531	55 40 12	2549	54 0 7	2568
	Sun	E.	111 22 10	2873	109 49 16	2892	108 16 47	2912	106 44 44	2931
7	Pollux	W.	45 7 17	2664	46 44 45	2681	48 21 51	2698	49 58 34	2718
	Saturn	W.	38 35 9	2669	40 12 30	2684	41 49 31	2699	43 26 12	2714
	Mars	E.	36 7 23	2875	34 34 32	2895	33 2 7	2914	31 30 6	2935
	Spica	E.	45 46 0	2657	44 8 23	2675	42 31 10	2692	40 54 19	2709
	Sun	E.	99 10 38	3029	97 41 1	3047	96 11 47	3066	94 42 56	3084
8	Pollux	W.	57 56 52	2792	59 31 31	2806	61 5 51	2820	62 39 53	2835
	Saturn	W.	51 24 41	2787	52 59 26	2801	54 33 52	2815	56 8 0	2828
	Regulus	W.	21 9 23	2801	22 43 50	2814	24 18 0	2827	25 51 53	2839
	Spica	E.	32 55 31	2787	31 20 46	2802	29 46 21	2817	28 12 15	2831

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Pegasi	W.	84 40 41	2226	86 28 30	2230	88 16 13	2237	90 3 46	2247
	α Arietis	W.	41 50 26	2030	43 43 8	2031	45 35 54	2034	47 28 35	2039
	Jupiter	W.	40 37 57	1974	42 32 12	1977	44 26 22	1982	46 20 24	1989
	Pollux	E.	33 30 49	1978	31 36 40	1985	29 42 42	1993	27 48 57	2008
	Saturn	E.	40 32 32	1982	38 38 30	1991	36 44 41	2000	34 51 7	2011
	Regulus	E.	70 17 3	1968	68 22 39	1975	66 28 25	1982	64 34 22	1989
	Mars	E.	111 19 42	2140	109 24 44	2147	107 39 56	2153	105 59 18	2161
2	α Arietis	W.	56 49 48	2075	58 41 25	2086	60 32 47	2096	62 23 52	2108
	Jupiter	W.	55 47 51	2030	57 40 38	2041	59 33 8	2053	61 25 20	2064
	Aldebaran	W.	27 4 40	2377	28 48 48	2350	30 33 34	2331	32 18 49	2316
	Saturn	E.	25 28 15	2088	23 36 58	2111	21 46 15	2136	19 56 11	2163
	Regulus	E.	55 7 26	2038	53 14 51	2050	51 22 34	2062	49 30 36	2075
	Mars	E.	96 45 23	2211	94 57 12	2223	93 9 19	2236	91 21 45	2249
3	α Arietis	W.	71 34 27	2176	73 23 30	2191	75 12 10	2208	77 0 26	2225
	Jupiter	W.	70 41 20	2136	72 31 25	2151	74 21 7	2167	76 10 24	2184
	Aldebaran	W.	41 8 2	2306	42 53 53	2311	44 39 36	2319	46 25 8	2327
	Regulus	E.	40 16 8	2149	38 26 25	2166	36 37 6	2183	34 48 13	2200
	Mars	E.	82 29 12	2326	80 43 50	2343	78 58 53	2360	77 14 21	2378
	Spica	E.	94 15 16	2145	92 25 26	2161	90 36 0	2178	88 46 59	2194
4	α Arietis	W.	85 55 27	2312	87 41 9	2331	89 26 24	2350	91 11 11	2369
	Jupiter	W.	85 10 26	2272	86 57 7	2290	88 43 21	2310	90 29 6	2328
	Aldebaran	W.	55 9 10	2387	56 53 3	2402	58 36 35	2417	60 19 46	2432
	Regulus	E.	25 50 30	2294	24 4 22	2315	22 18 44	2335	20 33 36	2356
	Mars	E.	68 38 9	2471	66 56 15	2491	65 14 49	2511	63 33 51	2530
	Spica	E.	79 48 18	2284	78 1 55	2302	76 15 59	2321	74 30 30	2339
	Sun	E.	130 31 13	2634	128 53 4	2653	127 15 21	2672	125 38 4	2691
5	Jupiter	W.	99 11 1	2424	100 54 1	2443	102 36 34	2463	104 18 39	2482
	Aldebaran	W.	68 49 58	2515	70 30 50	2533	72 11 17	2551	73 51 19	2568
	Pollux	W.	25 6 18	2453	26 48 38	2470	28 30 34	2487	30 12 6	2504
	Mars	E.	55 15 54	2632	53 37 42	2652	51 59 58	2672	50 22 41	2693
	Spica	E.	65 49 56	2436	64 7 11	2454	62 24 53	2473	60 43 2	2493
	Sun	E.	117 38 9	2792	116 3 30	2812	114 29 18	2831	112 55 31	2852
6	Jupiter	W.	112 42 22	2577	114 21 48	2596	116 0 48	2615	117 39 23	2633
	Aldebaran	W.	82 5 23	2656	83 42 59	2676	85 20 11	2694	86 56 59	2712
	Pollux	W.	38 33 29	2594	40 12 32	2612	41 51 11	2629	43 29 26	2647
	Saturn	W.	32 2 17	2606	33 41 1	2624	35 19 24	2638	36 57 27	2654
	Mars	E.	42 23 6	2795	40 48 32	2815	39 14 24	2835	37 40 41	2854
	Spica	E.	52 20 28	2586	50 41 14	2604	49 2 25	2623	47 24 1	2640
	Sun	E.	105 13 5	2952	103 41 52	2972	102 11 4	2990	100 40 39	3009
7	Pollux	W.	51 34 56	2730	53 10 56	2747	54 46 34	2761	56 21 53	2776
	Saturn	W.	45 2 34	2729	46 38 34	2744	48 14 15	2759	49 49 37	2772
	Mars	E.	29 58 30	2954	28 27 20	2974	26 56 35	2994	25 26 15	3014
	Spica	E.	39 17 51	2725	37 41 44	2741	36 5 59	2757	34 30 35	2772
	Sun	E.	93 14 27	3101	91 46 19	3119	90 18 32	3136	88 51 6	3153
8	Pollux	W.	64 13 36	2848	65 47 2	2861	67 20 11	2873	68 53 4	2886
	Saturn	W.	57 41 51	2841	59 15 26	2853	60 48 45	2866	62 21 48	2878
	Regulus	W.	27 25 30	2852	28 58 50	2865	30 31 54	2876	32 4 43	2887
	Spica	E.	26 38 27	2844	25 4 56	2856	23 31 43	2870	21 58 46	2883

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Sun	E.	87 24 1	3170	85 57 16	3185	84 30 49	3201	83 4 41	3217
9	Pollux	W.	70 25 41	2898	71 58 3	2901	73 30 10	2916	75 2 3	2931
	Saturn	W.	63 54 35	2889	65 27 8	2900	66 59 27	2912	68 31 31	2921
	Regulus	W.	33 37 16	2900	35 9 35	2911	36 41 40	2922	38 13 31	2932
	Sun	E.	75 58 26	3288	74 34 0	3300	73 9 49	3313	71 45 52	3325
10	Pollux	W.	82 38 14	2979	84 8 53	2988	85 37 21	2996	87 9 39	3003
	Saturn	W.	76 8 47	2968	77 39 40	2977	79 10 22	2984	80 40 55	2992
	Regulus	W.	45 49 36	2979	47 20 15	2988	48 50 43	2996	50 21 1	3003
	Sun	E.	64 49 27	3379	63 26 47	3390	62 4 19	3399	60 42 1	3406
11	Pollux	W.	94 38 58	3036	96 8 26	3042	97 37 47	3046	99 7 3	3050
	Saturn	W.	88 11 27	3022	89 41 12	3029	91 10 49	3034	92 40 21	3038
	Regulus	W.	57 50 23	3035	59 19 52	3040	60 49 15	3046	62 18 31	3050
	Sun	E.	53 52 52	3446	52 31 28	3454	51 10 13	3460	49 49 4	3466
12	Regulus	W.	69 43 38	3068	71 12 27	3070	72 41 13	3073	74 9 56	3075
	Mars	W.	22 51 4	3326	24 14 45	3324	25 38 29	3323	27 2 14	3321
	Sun	E.	43 5 0	3494	41 44 29	3499	40 24 4	3504	39 3 44	3508
13	Regulus	W.	81 33 0	3081	83 1 33	3082	84 30 5	3082	85 58 37	3081
	Mars	W.	34 1 19	3317	35 25 11	3315	36 49 5	3313	38 13 1	3313
	Spica	W.	27 31 59	3079	29 0 34	3080	30 29 8	3080	31 57 42	3080
	Sun	E.	32 23 22	3533	31 3 34	3538	29 43 52	3543	28 24 15	3549
18	Sun	W.	22 56 55	3443	24 18 23	3426	25 40 10	3409	27 2 16	3393
	Fomalhaut	E.	44 40 44	3516	43 20 38	3544	42 1 2	3574	40 41 59	3607
	a Pegasi	E.	65 46 34	3267	64 21 44	3270	62 56 57	3272	61 32 13	3275
	Jupiter	E.	106 58 25	2957	105 27 18	2950	103 56 3	2944	102 24 40	2938
	a Arietis	E.	107 2 34	2986	105 32 4	2980	104 1 26	2973	102 30 40	2966
19	Sun	W.	33 56 37	3332	35 20 11	3320	36 43 59	3310	38 7 59	3298
	a Pegasi	E.	54 29 46	3304	53 5 39	3313	51 41 43	3324	50 17 59	3336
	Jupiter	E.	94 45 43	2905	93 13 30	2897	91 41 7	2890	90 8 35	2882
	a Arietis	E.	94 54 40	2931	93 23 1	2924	91 51 13	2916	90 19 15	2909
20	Sun	W.	45 11 16	3243	46 36 34	3233	48 2 4	3221	49 27 48	3209
	a Pegasi	E.	43 23 36	3430	42 1 53	3457	40 40 41	3490	39 20 6	3528
	Jupiter	E.	82 23 26	2842	80 49 53	2834	79 16 9	2825	77 42 14	2816
	a Arietis	E.	82 36 53	2868	81 3 53	2859	79 30 42	2851	77 57 20	2842
21	Sun	W.	56 39 55	3150	58 7 4	3138	59 34 28	3126	61 2 6	3114
	Jupiter	E.	69 49 36	2769	68 14 28	2759	66 39 6	2748	65 3 30	2738
	a Arietis	E.	70 7 29	2795	68 32 54	2785	66 58 6	2774	65 23 4	2764
	Aldebaran	E.	101 15 9	2837	99 41 29	2826	98 7 35	2815	96 33 26	2802
22	Sun	W.	68 24 11	3047	69 53 25	3034	71 22 56	3020	72 52 44	3006
	a Aquilæ	W.	48 16 40	4304	49 23 29	4219	50 31 37	4131	51 41 9	4051
	Jupiter	E.	57 1 59	2684	55 24 57	2672	53 47 40	2660	52 10 7	2649
	a Arietis	E.	57 24 31	2711	55 48 6	2700	54 11 26	2689	52 34 32	2678
	Aldebaran	E.	88 38 51	2744	87 3 9	2732	85 27 11	2719	83 50 57	2707
23	Sun	W.	80 26 15	2932	81 57 53	2916	83 29 51	2901	85 2 8	2886
	a Aquilæ	W.	57 46 48	3725	59 3 9	3671	60 20 27	3621	61 38 39	3573

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Sun E.	81 38 52	3231	80 13 20	3247	78 48 6	3260	77 23 8	3274
9	Pollux W.	76 33 42	2942	78 5 9	2951	79 36 23	2962	81 7 24	2970
	Saturn W.	70 3 23	2931	71 35 2	2942	73 6 28	2950	74 37 43	2959
	Regulus W.	39 45 9	2942	41 16 34	2953	42 47 46	2962	44 18 46	2970
	Sun E.	70 22 9	3336	68 58 39	3348	67 35 23	3358	66 12 19	3369
10	Pollux W.	88 39 48	3010	90 9 48	3018	91 39 39	3024	93 9 22	3030
	Saturn W.	82 11 18	2999	83 41 32	3005	85 11 38	3012	86 41 36	3018
	Regulus W.	51 51 10	3010	53 21 10	3017	54 51 2	3023	56 20 46	3029
	Sun E.	59 19 53	3415	57 57 54	3424	56 36 5	3432	55 14 25	3438
11	Pollux W.	100 36 14	3056	102 5 18	3060	103 34 17	3063	105 3 12	3065
	Saturn W.	94 9 46	3043	95 39 6	3047	97 8 21	3050	98 37 32	3054
	Regulus W.	63 47 42	3054	65 16 48	3058	66 45 49	3061	68 14 46	3065
	Sun E.	48 28 2	3472	47 7 7	3478	45 46 18	3484	44 25 36	3489
12	Regulus W.	75 38 36	3077	77 7 14	3078	78 35 50	3078	80 4 26	3080
	Mars W.	28 26 1	3320	29 49 49	3319	31 13 38	3319	32 37 28	3318
	Sun E.	37 43 29	3514	36 23 20	3518	35 3 16	3522	33 43 16	3527
13	Regulus W.	87 27 10	3081	88 55 43	3081	90 24 16	3079	91 52 51	3078
	Mars W.	39 36 58	3312	41 0 56	3310	42 24 56	3308	43 48 58	3306
	Spica W.	33 26 16	3079	34 54 51	3079	36 23 26	3078	37 52 2	3078
	Sun E.	27 4 45	3557	25 45 24	3565	24 26 12	3574	23 7 9	3582
18	Sun W.	28 24 38	3381	29 47 16	3369	31 10 8	3356	32 33 15	3343
	Fomalhaut E.	39 23 32	3646	38 5 47	3691	36 48 50	3741	35 32 46	3798
	a Pegasi E.	60 7 32	3279	58 42 56	3284	57 18 26	3290	55 54 3	3295
	Jupiter E.	100 53 9	2931	99 21 30	2925	97 49 43	2918	96 17 47	2912
	a Arietis E.	100 59 45	2960	99 28 42	2953	97 57 30	2946	96 26 10	2939
19	Sun W.	39 32 13	3288	40 56 39	3276	42 21 18	3265	43 46 10	3263
	a Pegasi E.	48 54 29	3350	47 31 15	3366	46 8 20	3385	44 45 46	3406
	Jupiter E.	88 35 53	2874	87 3 1	2867	85 30 0	2859	83 56 49	2850
	a Arietis E.	88 47 7	2901	87 14 49	2893	85 42 21	2885	84 9 43	2876
20	Sun W.	50 53 47	3198	52 19 58	3187	53 46 23	3175	55 13 2	3163
	a Pegasi E.	38 0 13	3570	36 41 6	3620	35 22 53	3677	34 5 42	3745
	Jupiter E.	76 8 7	2807	74 33 48	2797	72 59 16	2788	71 24 32	2779
	a Arietis E.	76 23 46	2832	74 50 0	2823	73 16 2	2814	71 41 52	2804
21	Sun W.	62 29 59	3101	63 58 8	3088	65 26 32	3074	66 55 13	3060
	Jupiter E.	63 27 40	2728	61 51 37	2716	60 15 19	2706	58 38 47	2694
	a Arietis E.	63 47 49	2753	62 12 20	2744	60 36 38	2733	59 0 42	2724
	Aldebaran E.	94 59 1	2792	93 24 22	2779	91 49 27	2768	90 14 17	2756
22	Sun W.	74 22 49	2991	75 53 13	2977	77 23 55	2962	78 54 56	2947
	a Aquilæ W.	52 51 58	3976	54 3 59	3909	55 17 11	3843	56 31 29	3784
	Jupiter E.	50 32 18	2638	48 54 14	2626	47 15 55	2614	45 37 19	2602
	a Arietis E.	50 57 23	2667	49 19 59	2657	47 42 22	2646	46 4 29	2635
	Aldebaran E.	82 14 26	2694	80 37 38	2682	79 0 34	2669	77 23 13	2657
23	Sun W.	86 34 45	2870	88 7 42	2855	89 40 59	2838	91 14 37	2822
	a Aquilæ W.	62 57 43	3526	64 17 38	3484	65 38 20	3042	66 59 49	3404

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Jupiter	E.	43 58 27	2591	42 19 19	2579	40 39 55	2567	39 0 15	2556
	α Arietis	E.	44 26 21	2625	42 48 0	2615	41 9 25	2604	39 30 36	2595
	Aldebaran	E.	75 45 36	2644	74 7 41	2631	72 29 28	2619	70 50 59	2607
24	Sun	W.	92 48 36	2806	94 22 56	2790	95 57 37	2774	97 32 39	2758
	α Aquilæ	W.	68 22 1	3366	69 44 56	3332	71 8 30	3299	72 32 43	3267
	Fomalhaut	W.	39 47 2	3107	41 15 3	3049	42 44 15	2995	44 14 34	2946
	Jupiter	E.	30 38 10	2505	28 57 4	2497	27 15 47	2491	25 34 21	2487
	Aldebaran	E.	62 34 17	2545	60 54 6	2583	59 13 39	2522	57 32 56	2510
	Saturn	E.	111 5 25	2441	109 22 49	2426	107 39 52	2411	105 56 33	2397
25	Sun	W.	105 33 9	2678	107 10 19	2661	108 47 51	2646	110 25 44	2630
	Fomalhaut	W.	52 0 23	2744	53 36 4	2711	55 12 29	2681	56 49 35	2651
	α Pegasi	W.	32 3 49	3348	33 27 5	3242	34 52 25	3148	36 19 36	3064
	Aldebaran	E.	49 5 35	2462	47 23 29	2454	45 41 11	2448	43 58 45	2443
	Pollux	E.	91 40 52	2335	89 55 43	2320	88 10 12	2305	86 24 20	2290
	Saturn	E.	97 14 31	2320	95 29 0	2304	93 43 7	2290	91 56 53	2275
26	Sun	W.	118 40 21	2556	120 20 17	2541	122 0 33	2527	123 41 8	2514
	Fomalhaut	W.	65 4 33	2522	66 45 15	2501	68 26 27	2480	70 8 8	2460
	α Pegasi	W.	43 58 13	2756	45 33 38	2710	47 10 5	2668	48 47 28	2627
	Aldebaran	E.	35 25 33	2446	33 43 4	2455	32 0 47	2468	30 18 49	2489
	Pollux	E.	77 29 38	2218	75 41 38	2206	73 53 19	2192	72 4 39	2178
	Saturn	E.	83 0 19	2204	81 11 57	2190	79 23 15	2177	77 34 13	2164
27	Fomalhaut	W.	78 43 4	2378	80 27 11	2364	82 11 37	2351	83 56 22	2339
	α Pegasi	W.	57 6 29	2473	58 48 20	2449	60 30 45	2426	62 13 43	2405
	Jupiter	W.	13 11 18	2378	14 55 24	2310	16 41 9	2260	18 28 8	2219
	Pollux	E.	62 56 36	2119	61 6 6	2109	59 15 20	2099	57 24 19	2089
	Saturn	E.	68 24 19	2105	66 33 28	2096	64 42 22	2080	62 51 1	2075
28	Fomalhaut	W.	92 43 48	2298	94 29 51	2293	96 16 1	2289	98 2 17	2287
	α Pegasi	W.	70 55 20	2322	72 40 48	2310	74 26 33	2300	76 12 32	2289
	Jupiter	W.	27 34 42	2106	29 25 32	2093	31 16 42	2081	33 8 10	2070
	α Arietis	W.	27 31 9	2166	29 20 28	2146	31 10 17	2129	33 0 32	2114
	Pollux	E.	48 5 46	2050	46 13 29	2043	44 21 2	2038	42 28 27	2034
	Saturn	E.	53 30 52	2088	51 38 17	2032	49 45 33	2027	47 52 41	2023
	Regulus	E.	84 53 38	2044	83 1 13	2038	81 8 38	2032	79 15 54	2026
29	α Pegasi	W.	85 5 25	2262	86 52 20	2260	88 39 18	2259	90 26 18	2260
	Jupiter	W.	42 28 46	2040	44 21 18	2037	46 13 55	2035	48 6 35	2035
	α Arietis	W.	42 16 25	2068	44 8 13	2064	46 0 8	2060	47 52 9	2057
	Pollux	E.	33 4 11	2023	31 11 12	2023	29 18 14	2025	27 25 19	2027
	Saturn	E.	38 27 20	2016	36 34 11	2019	34 41 6	2021	32 48 5	2025
	Regulus	E.	69 50 33	2012	67 57 17	2011	66 4 0	2010	64 10 42	2011
30	Jupiter	W.	57 29 45	2042	59 22 13	2047	61 14 34	2052	63 6 47	2059
	α Arietis	W.	57 12 40	2061	59 4 40	2064	60 56 35	2068	62 48 23	2073
	Regulus	E.	54 44 48	2026	52 51 54	2031	50 59 8	2036	49 6 30	2042
	Spica	E.	108 44 48	2023	106 51 49	2028	104 58 59	2034	103 6 18	2041
31	Jupiter	W.	72 25 10	2099	74 16 10	2109	76 6 55	2120	77 57 23	2133
	α Arietis	W.	72 4 57	2112	73 55 38	2122	75 46 4	2133	77 36 13	2143
	Regulus	E.	39 46 15	2086	37 54 55	2097	36 3 51	2109	34 13 5	2121
	Spica	E.	93 45 41	2083	91 54 16	2094	90 3 7	2104	88 12 14	2116

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Jupiter	E.	37 20 20	2545	35 40 9	2534	33 59 43	2524	32 19 3	2515
	a Arietis	E.	37 51 34	2587	36 12 21	2578	34 32 56	2571	32 53 21	2564
	Aldebaran	E.	69 12 13	2594	67 33 10	2581	65 53 49	2569	64 14 11	2557
24	Sun	W.	99 8 2	2742	100 43 46	2725	102 19 52	2709	103 56 20	2693
	a Aquilæ	W.	73 57 33	3236	75 22 59	3209	76 48 57	3182	78 15 28	3151
	Fomalhaut	W.	45 45 54	2901	47 18 12	2858	48 51 25	2818	50 25 30	2781
	Jupiter	E.	23 52 49	2483	22 11 12	2485	20 29 37	2491	18 48 11	2499
	Aldebaran	E.	55 51 57	2499	54 10 42	2489	52 29 13	2479	50 47 30	2470
	Saturn	E.	104 12 52	2380	102 28 49	2366	100 44 25	2350	98 59 39	2335
25	Sun	W.	112 3 58	2615	113 42 33	2599	115 21 29	2585	117 0 45	2570
	Fomalhaut	W.	58 27 21	2622	60 5 46	2596	61 44 47	2569	63 24 24	2546
	a Pegasi	W.	37 48 30	2989	39 18 56	2923	40 50 46	2862	42 23 54	2807
	Aldebaran	E.	42 16 12	2439	40 33 33	2438	38 50 52	2438	37 8 11	2440
	Pollux	E.	84 38 6	2276	82 51 31	2261	81 4 34	2247	79 17 16	2233
	Saturn	E.	90 10 17	2261	88 23 20	2246	86 36 1	2232	84 48 21	2217
26	Sun	W.	125 22 2	2502	127 3 13	2489	128 44 42	2477	130 26 27	2466
	Fomalhaut	W.	71 50 17	2442	73 32 52	2424	75 15 53	2408	76 59 17	2391
	a Pegasi	W.	50 25 44	2593	52 4 49	2559	53 44 40	2528	55 25 14	2499
	Aldebaran	E.	28 37 20	2513	26 56 25	2548	25 16 19	2594	23 37 16	2651
	Pollux	E.	70 15 39	2167	68 26 21	2154	66 36 44	2142	64 46 49	2130
	Saturn	E.	75 44 51	2151	73 55 10	2139	72 5 11	2128	70 14 54	2116
27	Fomalhaut	W.	85 41 24	2329	87 26 41	2320	89 12 11	2311	90 57 54	2303
	a Pegasi	W.	63 57 11	2385	65 41 7	2367	67 25 29	2351	69 10 14	2337
	Jupiter	W.	20 16 7	2188	22 4 53	2162	23 54 18	2141	25 44 15	2124
	Pollux	E.	55 33 3	2079	53 41 32	2071	51 49 48	2063	49 57 52	2057
	Saturn	E.	60 59 24	2066	59 7 33	2059	57 15 31	2052	55 23 17	2044
28	Fomalhaut	W.	99 48 36	2285	101 34 57	2284	103 21 20	2285	105 7 42	2287
	a Pegasi	W.	77 58 47	2282	79 45 13	2274	81 31 50	2269	83 18 35	2264
	Jupiter	W.	34 59 55	2062	36 51 52	2055	38 44 1	2049	40 36 19	2043
	a Arietis	W.	34 51 10	2101	36 42 7	2091	38 33 20	2082	40 24 47	2075
	Pollux	E.	40 35 46	2030	38 42 58	2026	36 50 5	2025	34 47 9	2023
	Saturn	E.	45 59 43	2021	44 6 42	2019	42 13 37	2017	40 20 29	2016
	Regulus	E.	77 23 1	2023	75 30 2	2019	73 36 58	2016	71 43 48	2012
29	*a* Pegasi	W.	92 13 17	2261	94 0 14	2264	95 47 6	2269	97 33 51	2275
	Jupiter	W.	49 59 15	2034	51 51 56	2035	53 44 36	2037	55 37 13	2040
	a Arietis	W.	49 44 14	2055	51 36 22	2055	53 28 30	2057	55 20 36	2058
	Pollux	E.	25 32 27	2032	23 39 42	2037	21 47 6	2044	19 54 40	2052
	Saturn	E.	30 55 10	2031	29 2 24	2039	27 9 50	2048	25 17 31	2058
	Regulus	E.	62 17 25	2012	60 24 10	2014	58 30 58	2017	56 37 50	2021
30	Jupiter	W.	64 58 50	2066	66 50 43	2072	68 42 25	2080	70 33 55	2090
	a Arietis	W.	64 40 3	2080	66 31 33	2086	68 22 53	2094	70 14 2	2103
	Regulus	E.	47 14 2	2050	45 21 46	2058	43 29 42	2066	41 37 51	2076
	Spica	E.	101 13 47	2048	99 21 27	2055	97 29 18	2063	95 37 22	2073
31	Jupiter	W.	79 47 32	2145	81 37 23	2157	83 26 55	2171	85 16 6	2185
	a Arietis	W.	79 26 6	2156	81 15 40	2169	83 4 55	2182	84 53 50	2198
	Regulus	E.	32 22 38	2134	30 32 30	2147	28 42 43	2161	26 53 17	2175
	Spica	E.	86 21 40	2129	84 31 25	2141	82 41 29	2155	80 51 53	2168

VENUS, 1857.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	21 35 58.39	11.737	−16 12 4.3	61.72	2 51.7
2	21 40 39.29	.670	15 47 10.8	62.71	2 52.5
3	21 45 18.63	.604	15 21 53.6	63.69	2 53.2
4	21 49 56.42	.542	14 56 13.4	64.63	2 53.9
5	21 54 32.68	.479	14 30 11.0	65.54	2 54.5
6	21 59 7.42	11.417	14 3 47.2	66.42	2 55.1
7	22 3 40.66	.354	13 37 2.9	67.26	2 55.8
8	22 8 12.42	.292	13 9 58.9	68.06	2 56.4
9	22 12 42.69	.230	12 42 35.9	68.83	2 56.9
10	22 17 11.49	.170	12 14 54.8	69.57	2 57.5
11	22 21 38.85	11.111	11 46 56.3	70.29	2 58.0
12	22 26 4.81	11.053	11 18 41.2	70.95	2 58.4
13	22 30 29.38	10.995	10 50 10.4	71.59	2 58.9
14	22 34 52.58	.939	10 21 24.6	72.21	2 59.4
15	22 39 14.45	.884	9 52 24.4	72.79	2 59.8
16	22 43 35.02	10.830	9 23 10.7	73.33	3 0.2
17	22 47 54.30	.777	8 53 44.2	73.85	3 0.5
18	22 52 12.33	.725	8 24 5.7	74.34	3 0.9
19	22 56 29.11	.674	7 54 15.8	74.79	3 1.2
20	23 0 44.66	.623	7 24 15.4	75.22	3 1.5
21	23 4 59.04	10.575	6 54 5.2	75.61	3 1.8
22	23 9 12.27	.528	6 23 46.0	75.97	3 2.1
23	23 13 24.36	.480	5 53 18.4	76.31	3 2.4
24	23 17 35.34	.434	5 22 43.3	76.61	3 2.6
25	23 21 45.23	.389	4 52 1.8	76.88	3 2.8
26	23 25 54.05	10.345	4 21 13.3	77.11	3 3.0
27	23 30 1.82	.301	3 50 20.0	77.31	3 3.2
28	23 34 8.55	.259	3 19 22.2	77.49	3 3.4
29	23 38 14.27	.218	2 48 20.5	77.63	3 3.5
30	23 42 19.01	.177	2 17 15.8	77.74	3 3.7
31	23 46 22.78	10.137	1 46 8.8	77.82	3 3.8
32	23 50 25.57	10.096	− 1 15 0.3	77.87	3 3.9

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage
	h. m. s.	s.	° ′ ″	″	h. m.
1	23 50 25.57	10.096	− 1 15 0.3	77.87	3 3.9
2	23 54 27.39	.057	0 43 51.0	77.89	3 4.0
3	23 58 28.29	10.019	− 0 12 41.7	77.88	3 4.0
4	0 2 28.28	9.981	+ 0 18 27.1	77.84	3 4.1
5	0 6 27.36	.943	0 49 34.5	77.76	3 4.1
6	0 10 25.55	9.906	1 20 39.7	77.66	3 4.2
7	0 14 22.87	.870	1 51 42.1	77.52	3 4.2
8	0 18 19.33	.834	2 22 40.9	77.36	3 4.2
9	0 22 14.93	.799	2 53 35.6	77.18	3 4.1
10	0 26 9.69	.764	3 24 25.6	76.97	3 4.1
11	0 30 3.62	9.731	3 55 10.1	76.73	3 4.1
12	0 33 56.73	.696	4 25 48.5	76.46	3 4.0
13	0 37 49.03	.663	4 56 20.2	76.17	3 3.9
14	0 41 40.54	.630	5 26 44.5	75.84	3 3.9
15	0 45 31.25	.596	5 57 0.8	75.49	3 3.8
16	0 49 21.15	9.562	6 27 8.3	75.12	3 3.7
17	0 53 10.25	.529	6 57 6.5	74.71	3 3.5
18	0 56 58.56	.496	7 26 54.8	74.29	3 3.4
19	1 0 46.08	.463	7 56 32.5	73.84	3 3.2
20	1 4 32.79	.429	8 25 59.1	73.36	3 3.0
21	1 8 18.67	9.394	8 55 13.9	72.86	3 2.9
22	1 12 3.70	.359	9 24 16.2	72.32	3 2.7
23	1 15 47.87	.323	9 53 5.3	71.76	3 2.5
24	1 19 31.18	.286	10 21 40.7	71.18	3 2.3
25	1 23 13.58	.246	10 50 1.7	70.56	3 2.0
26	1 26 55.04	9.207	11 18 7.6	69.92	3 1.8
27	1 30 35.52	.166	11 45 57.7	69.25	3 1.5
28	1 34 15.00	.123	12 13 31.5	68.55	3 1.2
29	1 37 53.43	.079	12 40 48.2	67.83	3 0.9
30	1 41 30.75	9.031	13 7 47.3	67.08	3 0.6
31	1 45 6.91	8.982	13 34 28.0	66.30	3 0.2
32	1 48 41.87	8.930	+14 0 49.8	65.50	2 59.9

Day of Month, 1st.		6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	7.7	7.9	8.2	8.4	8.7	9.0	9.4
Hor. Par.	7.9	8.0	8.2	8.5	8.8	9.1	9.5

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	9.8	10.2	10.7	11.2	11.8	12.4
Hor. Parallax	9.9	10.3	10.8	11.3	11.9	12.5

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	1 37 53.43	9.079	+12 40 48.2	67.83	3 0.9
2	1 41 30.75	9.031	13 7 47.3	67.08	3 0.6
3	1 45 6.91	8.982	13 34 28.0	66.30	3 0.2
4	1 48 41.87	.930	14 0 49.8	65.50	2 59.9
5	1 52 15.56	.876	14 26 52.0	64.68	2 59.5
6	1 55 47.91	8.819	14 52 33.9	63.81	2 59.1
7	1 59 18.86	.759	15 17 54.9	62.93	2 58.7
8	2 2 48.34	.696	15 42 54.6	62.03	2 58.2
9	2 6 16.28	.630	16 7 32.3	61.10	2 57.7
10	2 9 42.60	.561	16 31 47.5	60.15	2 57.2
11	2 13 7.22	8.489	16 55 39.5	59.16	2 56.7
12	2 16 30.05	.412	17 19 7.8	58.17	2 56.1
13	2 19 51.00	.332	17 42 12.0	57.16	2 55.5
14	2 23 9.96	.246	18 4 51.5	56.12	2 54.9
15	2 26 26.83	.158	18 27 5.7	55.06	2 54.2
16	2 29 41.52	8.065	18 48 54.2	53.96	2 53.5
17	2 32 53.90	7.966	19 10 16.4	52.87	2 52.7
18	2 36 3.87	.861	19 31 11.9	51.74	2 52.0
19	2 39 11.28	.752	19 51 40.0	50.59	2 51.2
20	2 42 15.99	.637	20 11 40.2	49.42	2 50.3
21	2 45 17.85	7.516	20 31 12.0	48.22	2 49.4
22	2 48 16.72	.386	20 50 14.9	47.01	2 48.4
23	2 51 12.43	.250	21 8 48.3	45.76	2 47.4
24	2 54 4.79	7.108	21 26 51.6	44.49	2 46.4
25	2 56 53.62	6.956	21 44 24.1	43.20	2 45.2
26	2 59 38.73	6.796	22 1 25.2	41.88	2 44.0
27	3 2 19.92	.630	22 17 54.3	40.53	2 42.7
28	3 4 56.97	.453	22 33 50.7	39.16	2 41.4
29	3 7 29.68	.268	22 49 13.9	37.76	2 40.0
30	3 9 57.80	6.070	23 4 3.0	36.32	2 38.5
31	3 12 21.06	5.863	23 18 17.2	34.85	2 36.9
32	3 14 39.21	5.644	+23 31 55.6	33.34	2 35.3

Day of the Month,	7th.	12th.	17th.	22d.	27th.	32d.
	″	″	″	″	″	″
Semidiameter	13.2	14.0	14.9	16.0	17.1	18.5
Hor. Parallax	13.3	14.1	15.0	16.1	17.2	18.6

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	3 14 39.21	5.644	+23 31 55.6	33.34	2 35.3
2	3 16 52.01	.416	23 44 57.5	31.80	2 33.6
3	3 18 59.20	5.177	23 57 22.1	30.23	2 31.7
4	3 21 0.50	4.936	24 9 8.5	28.62	2 29.8
5	3 22 55.68	.663	24 20 15.7	26.96	2 27.8
6	3 24 44.31	4.388	24 30 42.7	25.27	2 25.6
7	3 26 26.28	4.102	24 40 28.5	23.53	2 23.4
8	3 28 1.26	3.805	24 49 32.0	21.74	2 21.0
9	3 29 28.94	.495	24 57 52.1	19.91	2 18.5
10	3 30 49.03	3.173	25 5 27.5	18.01	2 15.9
11	3 32 1.25	2.840	25 12 16.7	16.06	2 13.2
12	3 33 5.35	.497	25 18 18.5	14.06	2 10.3
13	3 34 1.10	2.143	25 23 31.6	12.00	2 7.3
14	3 34 48.24	1.780	25 27 54.5	9.86	2 4.1
15	3 35 26.52	.406	25 31 25.4	7.66	2 0.8
16	3 35 55.71	1.023	25 34 2.4	5.39	1 57.3
17	3 36 15.61	0.632	25 35 43.8	3.04	1 53.7
18	3 36 26.05	+0.234	25 36 28.2	+0.62	1 49.9
19	3 36 26.88	−0.168	25 36 13.7	−1.87	1 46.0
20	3 36 17.98	.575	25 34 58.3	4.45	1 41.9
21	3 35 59.25	0.986	25 32 39.9	7.12	1 37.7
22	3 35 30.64	1.397	25 29 16.6	9.86	1 33.3
23	3 34 52.18	1.806	25 24 46.7	12.66	1 28.7
24	3 34 3.93	2.212	25 19 8.7	15.54	1 23.9
25	3 33 6.00	2.612	25 12 20.8	18.48	1 19.0
26	3 31 58.55	3.004	25 4 21.5	21.48	1 14.0
27	3 30 41.81	.384	24 55 9.7	24.51	1 8.8
28	3 29 16.11	3.748	24 44 44.8	27.56	1 3.4
29	3 27 41.88	4.095	24 33 6.6	30.62	0 57.9
30	3 25 59.60	.418	24 20 15.1	33.66	0 52.3
31	3 24 9.82	4.717	24 6 10.9	36.67	0 46.5
32	3 22 13.17	4.989	+23 50 54.9	39.61	0 40.7

Day of the Month,	6th.	11th.	16th.	21st.	26th.	31st.
		″	″	″	″	
Semidiameter	20.0	21.6	23.4	25.2	27.0	28.5
Hor. Parallax	20.1	21.8	23.5	25.4	27.2	28.6

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	3 24 9.82	−4.717	+24 6 10.8	36.67	0 46.5	1	2 37 23.91	+0.793	+14 11 44.7	23.45	21 54.5
2	3 22 13.17	4.989	23 50 54.9	39.61	0 40.7	2	2 37 47.17	1.142	14 2 54.7	20.74	21 51.1
3	3 20 10.35	5.230	23 34 29.4	42.46	0 34.7	3	2 38 18.72	.488	13 55 9.2	18.06	21 47.8
4	3 18 2.14	.436	23 16 57.0	45.17	0 28.7	4	2 38 58.38	1.818	13 48 27.2	15.45	21 44.6
5	3 15 49.41	.605	22 58 21.3	47.72	0 22.6	5	2 39 45.97	2.144	13 42 47.4	12.89	21 41.6
6	3 13 33.08	5.735	22 38 46.5	50.09	0 16.3	6	2 40 41.28	2.462	13 38 8.5	10.39	21 38.7
7	3 11 14.10	.826	22 18 17.2	52.25	0 10.1	7	2 41 44.09	2.769	13 34 28.8	7.96	21 35.9
8	3 8 53.41	.878	21 56 58.7	54.17	0 3.8 23 57.6	8	2 42 54.18	3.068	13 31 46.2	5.62	21 33.2
9	3 6 31.98	.887	21 34 57.2	55.81	23 51.3	9	2 44 11.34	.358	13 29 58.8	3.36	21 30.7
10	3 4 10.83	.854	21 12 19.6	57.16	23 45.0	10	2 45 35.37	.640	13 29 4.9	−1.16	21 28.2
11	3 1 50.99	5.779	20 49 13.4	58.20	23 38.8	11	2 47 6.07	3.913	13 29 2.5	+0.94	21 25.9
12	2 59 33.45	.663	20 25 46.1	58.93	23 32.6	12	2 48 43.20	4.176	13 29 49.4	2.93	21 23.7
13	2 57 19.15	.510	20 2 5.2	59.32	23 26.5	13	2 50 26.54	.431	13 31 23.2	4.84	21 21.6
14	2 55 8.94	.324	19 38 18.7	59.39	23 20.6	14	2 52 15.88	.677	13 33 41.6	6.66	21 19.5
15	2 53 3.60	5.105	19 14 34.6	59.12	23 14.7	15	2 54 11.04	4.915	13 36 42.6	8.39	21 17.6
16	2 51 3.87	4.858	18 51 0.6	58.55	23 8.9	16	2 56 11.82	5.146	13 40 24.3	10.04	21 15.8
17	2 49 10.43	.583	18 27 44.0	57.69	23 3.2	17	2 58 18.05	.368	13 44 44.5	11.59	21 14.0
18	2 47 23.89	4.285	18 4 51.7	56.54	22 57.6	18	3 0 29.49	.581	13 49 40.7	13.04	21 12.3
19	2 45 44.77	3.966	17 42 30.2	55.12	22 52.1	19	3 2 45.96	.788	13 55 10.7	14.42	21 10.7
20	2 44 13.53	.629	17 20 45.8	53.46	22 46.8	20	3 5 7.32	5.988	14 1 12.8	15.72	21 9.2
21	2 42 50.54	3.280	16 59 44.2	51.57	22 41.6	21	3 7 33.41	6.182	14 7 45.1	16.93	21 7.8
22	2 41 36.09	2.920	16 39 30.3	49.50	22 36.6	22	3 10 4.06	.369	14 14 45.4	18.05	21 6.4
23	2 40 30.39	.550	16 20 8.2	47.27	22 31.7	23	3 12 39.12	.549	14 22 11.7	19.10	21 5.1
24	2 39 33.59	2.176	16 1 41.4	44.90	22 27.0	24	3 15 18.44	.725	14 30 2.2	20.07	21 3.9
25	2 38 45.81	1.801	15 44 13.1	42.40	22 22.4	25	3 18 1.91	6.895	14 38 15.2	20.97	21 2.7
26	2 38 7.14	.421	15 27 46.1	39.80	22 18.0	26	3 20 49.38	7.059	14 46 48.7	21.79	21 1.6
27	2 37 37.59	1.042	15 12 22.5	37.14	22 13.7	27	3 23 40.72	.218	14 55 41.1	22.54	21 0.6
28	2 37 17.10	0.666	14 58 3.5	34.43	22 9.6	28	3 26 35.84	.373	15 4 50.8	23.23	20 59.6
29	2 37 5.58	−0.295	14 44 49.8	31.70	22 5.6	29	3 29 34.65	.525	15 14 16.1	23.85	20 58.7
30	2 37 2.95	+0.073	14 32 41.9	28.95	22 1.8	30	3 32 37.03	.671	15 23 55.5	24.41	20 57.9
31	2 37 9.11	.437	14 21 40.2	26.19	21 58.1	31	3 35 42.88	7.815	15 33 47.5	24.90	20 57.1
32	2 37 23.91	0.793	+14 11 44.7	23.45	21 54.5	32	3 38 52.14	7.955	+15 43 50.5	25.32	20 56.4

Day of the Month,	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″			″	″	″	″	
Semidiameter	29.4	29.7	29.1	27.9	26.2	24.4	Semidiameter	22.5	20.8	19.1	17.7	16.4	15.3
Hor. Parallax	29.6	29.9	29.3	28.1	26.4	24.6	Hor. Parallax	22.7	20.9	19.3	17.8	16.5	15.4

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	3 35 42.88	7.315	+15 33 47.5	24.90	20 57.1
2	3 38 52.14	7.955	15 43 50.5	25.32	20 56.4
3	3 42 4.72	8.092	15 54 3.1	25.69	20 55.7
4	3 45 20.55	.226	16 4 23.8	26.00	20 55.0
5	3 48 39.55	.356	16 14 51.1	26.24	20 54.4
6	3 52 1.63	8.483	16 25 23.5	26.43	20 53.9
7	3 55 26.73	.607	16 35 59.9	26.57	20 53.4
8	3 58 54.78	.729	16 46 39.0	26.65	20 53.0
9	4 2 25.73	.848	16 57 19.4	26.67	20 52.7
10	4 5 59.51	8.965	17 7 59.8	26.65	20 52.3
11	4 9 36. 6	9.079	17 18 38.7	26.56	20 52.0
12	4 13 15.32	.191	17 29 14.8	26.42	20 51.7
13	4 16 57.21	.299	17 39 47.0	26.24	20 51.5
14	4 20 41.67	.405	17 50 14.3	26.01	20 51.4
15	4 24 28.64	.508	18 0 35.5	25.73	20 51.2
16	4 28 18. 7	9.609	18 10 49.3	25.39	20 51.1
17	4 32 9.91	.709	18 20 54.6	25.00	20 51.1
18	4 36 4.10	.805	18 30 50.4	24.60	20 51.1
19	4 40 0.56	.899	18 40 35.5	24.13	20 51.1
20	4 43 59.25	9.991	18 50 8.8	23.62	20 51.2
21	4 48 0.11	10.080	18 59 29.5	23.09	20 51.3
22	4 52 3. 9	.167	19 8 36.5	22.49	20 51.4
23	4 56 8.15	.253	19 17 29.0	21.86	20 51.6
24	5 0 15.22	.335	19 26 5.9	21.20	20 51.8
25	5 4 24.25	.416	19 34 26.4	20.49	20 52.0
26	5 8 35.21	10.496	19 42 29.6	19.75	20 52.3
27	5 12 48. 5	.573	19 50 14.7	18.99	20 52.6
28	5 17 2.71	.648	19 57 41.0	18.19	20 52.9
29	5 21 19.14	.720	20 4 47.6	17.35	20 53.3
30	5 25 37.31	.793	20 11 33.7	16.47	20 53.7
31	5 29 57.19	10.863	20 17 58.4	15.57	20 54.0
32	5 34 18.73	10.931	+20 24 1.1	14.64	20 54.5

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	5 34 18.73	10.931	+20 24 1.1	14.64	20 54.5
2	5 38 41.87	10.997	20 29 41.1	13.68	20 55.0
3	5 43 6.58	11.061	20 34 57.6	12.69	20 55.5
4	5 47 32.83	.124	20 39 50.0	11.67	30 56.0
5	5 52 0.55	.185	20 44 17.7	10.62	20 56.5
6	5 56 29.69	11.243	20 48 20.0	9.55	20 57.1
7	6 1 10.21	.299	20 51 56.3	8.46	20 57.7
8	6 5 32.06	.354	20 55 6.0	7.33	20 58.3
9	6 10 5.21	.407	20 57 48.4	6.19	20 58.9
10	6 14 39.60	.457	21 0 3.0	5.02	20 59.6
11	6 19 15.16	11.505	21 1 49.3	3.83	21 0.3
12	6 23 51.84	.550	21 3 6.8	2.62	21 0.9
13	6 28 29.58	.594	21 3 55.2	1.40	21 1.6
14	6 33 8.33	.635	21 4 14.0	+0.15	21 2.4
15	6 37 48.04	.673	21 4 2.7	−1.11	21 3.1
16	6 42 28.64	11.709	21 3 20.9	2.38	21 3.8
17	6 47 10.08	.743	21 2 8.3	3.67	21 4.6
18	6 51 52.30	.774	21 0 24.6	4.98	21 5.4
19	6 56 35.25	.803	20 58 9.5	6.28	21 6.1
20	7 1 18.86	.829	20 55 23.0	7.60	21 6.9
21	7 6 3.08	11.854	20 52 4.6	8.93	21 7.7
22	7 10 47.85	.876	20 48 14.3	10.27	21 8.6
23	7 15 33.12	.896	20 43 51.8	11.61	21 9.4
24	7 20 18.84	.913	20 38 57.0	12.96	21 10.2
25	7 25 4.97	.929	20 33 29.8	14.30	21 11.0
26	7 29 51.46	11.943	20 27 30.2	15.65	21 11.9
27	7 34 38.26	.954	20 20 58.1	17.02	21 12.7
28	7 39 25.30	.964	20 13 53.4	18.39	21 13.6
29	7 44 12.55	.972	20 6 16.1	19.73	21 14.4
30	7 48 59.98	.979	19 58 6.2	21.09	21 15.3
31	7 53 47.54	11.983	19 49 23.9	22.44	21 16.1
32	7 58 35.19	11.986	+19 40 9.1	23.79	21 17.0

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	14.3	13.4	12.6	11.9	11.3	10.7
Hor. Parallax	14.4	13.5	12.7	12.0	11.4	10.8

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter	10.2	9.8	9.4	9.0	8.6	8.3
Hor. Parallax	10.3	9.8	9.4	9.1	8.7	8.4

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	7 58 35.19	11.986	+19 40 9.1	23.79	21 17.0
2	8 3 22.88	.987	19 30 21.9	25.14	21 17.8
3	8 8 10.57	.987	19 20 2.4	26.49	21 18.7
4	8 12 58.26	.986	19 9 10.7	27.82	21 19.5
5	8 17 45.90	.983	18 57 46.9	29.13	21 20.4
6	8 22 33.44	11.977	18 45 51.3	30.47	21 21.2
7	8 27 20.88	.971	18 33 24.1	31.79	21 22.1
8	8 32 8.07	.963	18 20 25.4	33.09	21 22.9
9	8 36 55.12	.955	18 6 55.5	34.39	21 23.7
10	8 41 41.93	.945	17 52 54.7	35.67	21 24.6
11	8 46 28.47	11.933	17 38 23.4	36.93	21 25.4
12	8 51 14.72	.921	17 23 21.9	38.19	21 26.2
13	8 56 0.66	.907	17 7 50.4	39.43	21 27.1
14	9 0 46.24	.891	16 51 49.3	40.65	21 27.9
15	9 5 31.45	.875	16 35 19.1	41.85	21 28.7
16	9 10 16.27	11.860	16 18 20.2	43.04	21 29.5
17	9 15 0.69	.841	16 0 52.9	44.22	21 30.2
18	9 19 44.66	.823	15 42 57.8	45.36	21 31.0
19	9 24 28.18	.804	15 24 35.4	46.49	21 31.8
20	9 29 11.23	.785	15 5 46.1	47.61	21 32.6
21	9 33 53.82	11.764	14 46 30.4	48.69	21 33.3
22	9 38 35.92	.744	14 26 48.8	49.76	21 34.1
23	9 43 17.52	.722	14 6 41.9	50.80	21 34.8
24	9 47 58.62	.702	13 46 10.1	51.83	21 35.6
25	9 52 39.21	.681	13 25 14.0	52.83	21 36.3
26	9 57 19.30	11.660	13 3 54.1	53.81	21 37.0
27	10 1 58.91	.640	12 42 11.1	54.76	21 37.7
28	10 6 38.02	.620	12 20 5.4	55.70	21 38.4
29	10 11 16.65	.599	11 57 37.5	56.61	21 39.1
30	10 15 54.78	.579	11 34 48.1	57.50	21 39.8
31	10 20 32.44	11.560	11 11 37.6	58.36	21 40.5
32	10 25 9.65	11.541	+10 48 6.7	59.20	21 41.2

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	10 20 32.44	11.560	+11 11 37.6	58.36	21 40.5
2	10 25 9.65	.541	10 48 6.7	59.20	21 41.2
3	10 29 46.41	.523	10 24 16.0	60.01	21 41.8
4	10 34 22.75	.505	10 0 6.0	60.80	21 42.5
5	10 38 58.67	.488	9 35 37.4	61.56	21 43.1
6	10 43 34.19	11.472	9 10 50.9	62.30	21 43.8
7	10 48 9.33	.456	8 45 46.9	63.02	21 44.4
8	10 52 44.09	.441	8 20 26.0	63.70	21 45.0
9	10 57 18.51	.427	7 54 49.1	64.36	21 45.6
10	11 1 52.60	.414	7 28 56.8	64.98	21 46.2
11	11 6 26.88	11.401	7 2 49.8	65.59	21 46.9
12	11 10 59.88	.390	6 36 28.6	66.17	21 47.5
13	11 15 33.10	.380	6 9 53.8	66.72	21 48.1
14	11 20 6.08	.369	5 43 6.3	67.23	21 48.7
15	11 24 38.83	.361	5 16 6.9	67.71	21 49.3
16	11 29 11.39	11.352	4 48 56.2	68.17	21 49.9
17	11 33 43.76	.346	4 21 34.8	68.60	21 50.5
18	11 38 15.99	.340	3 54 3.6	68.99	21 51.1
19	11 42 48.10	.336	3 26 23.2	69.36	21 51.7
20	11 47 20.11	.332	2 58 34.3	69.70	21 52.3
21	11 51 52.04	11.330	2 30 37.6	70.00	21 52.9
22	11 56 23.95	.329	2 2 33.9	70.29	21 53.5
23	12 0 55.87	.331	1 34 23.8	70.54	21 54.1
24	12 5 27.82	.332	1 6 8.1	70.77	21 54.7
25	12 9 59.80	.333	0 37 47.4	70.95	21 55.3
26	12 14 31.86	11.338	+ 0 9 22.5	71.11	21 55.9
27	12 19 4.05	.344	− 0 19 5.9	71.24	21 56.4
28	12 23 36.41	.353	0 47 36.9	71.33	21 57.0
29	12 28 8.98	.362	1 16 9.9	71.40	21 57.6
30	12 32 41.79	.372	1 44 44.4	71.45	21 58.2
31	12 37 14.87	11.384	2 13 19.7	71.47	21 58.9
32	12 41 48.25	11.398	− 2 41 54.9	71.45	21 59.5

Day of the Month,	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter	8.1	7.8	7.6	7.4	7.2	7.0
Hor. Parallax	8.1	7.9	7.6	7.4	7.2	7.0

Day of the Month,	3d.	8th.	13th.	18th.	23d.	28th.
		″	″	″	″	
Semidiameter	6.8	6.6	6.5	6.4	6.2	6.1
Hor. Parallax	6.8	6.7	6.5	6.4	6.3	6.2

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	12 41 48.25	11.398	− 2 41 54.9	71.45	21 59.5	1	15 3 40.09	12.421	−15 55 36.7	55.87	22 23.5
2	12 46 21.98	.413	3 10 29.2	71.40	22 0.1	2	15 8 38.78	.470	16 17 45.5	54.85	22 24.5
3	12 50 56.09	.430	3 39 2.0	71.32	22 0.8	3	15 13 38.66	.520	16 39 29.1	53.79	22 25.6
4	12 55 30.63	.449	4 7 32.6	71.21	22 1.4	4	15 18 39.72	.569	17 0 46.8	52.69	22 26.7
5	13 0 5.62	.468	4 36 0.2	71.07	22 2.0	5	15 23 41.99	.620	17 21 37.9	51.56	22 27.8
6	13 4 41.10	11.489	5 4 24.0	70.90	22 2.7	6	15 28 45.47	12.670	17 42 1.6	50.40	22 29.0
7	13 9 17.10	.511	5 32 43.2	70.70	22 3.4	7	15 33 50.16	.720	18 1 57.1	49.21	22 30.1
8	13 13 53.66	.536	6 0 57.1	70.46	22 4.0	8	15 38 56.04	.770	18 21 23.5	47.96	22 31.3
9	13 18 30.84	.561	6 29 5.1	70.18	22 4.7	9	15 44 3.12	.820	18 40 20.0	46.71	22 32.5
10	13 23 8.66	.589	6 57 6.3	69.89	22 5.4	10	15 49 11.41	.870	18 58 46.0	45.42	22 33.7
11	13 27 47.14	11.617	7 24 59.9	69.56	22 6.1	11	15 54 20.87	12.917	19 16 40.9	44.12	22 34.9
12	13 32 26.31	.647	7 52 45.0	69.20	22 6.9	12	15 59 31.49	12.967	19 34 3.8	42.77	22 36.2
13	13 37 6.21	.679	8 20 20.9	68.79	22 7.6	13	16 4 43.27	13.015	19 50 54.0	41.39	22 37.5
14	13 41 46.86	.710	8 47 46.8	68.35	22 8.3	14	16 9 56.21	.062	20 7 10.7	39.98	22 38.8
15	13 46 28.31	.744	9 15 1.9	67.90	22 9.1	15	16 15 10.26	.107	20 22 53.2	38.54	22 40.1
16	13 51 10.58	11.778	9 42 5.3	67.39	22 9.9	16	16 20 25.38	13.152	20 38 0.8	37.08	22 41.4
17	13 55 53.67	.813	10 8 56.3	66.85	22 10.7	17	16 25 41.55	.196	20 52 33.0	35.59	22 42.7
18	14 0 37.63	.851	10 35 34.1	66.28	22 11.5	18	16 30 58.76	.238	21 6 29.2	34.07	22 44.1
19	14 5 22.52	.889	11 1 57.8	65.69	22 12.3	19	16 36 16.98	.279	21 19 48.7	32.53	22 45.5
20	14 10 8.34	.928	11 28 6.6	65.05	22 13.1	20	16 41 36.17	.319	21 32 30.9	30.97	22 46.9
21	14 14 55.09	11.968	11 53 59.8	64.39	22 14.0	21	16 46 56.29	13.356	21 44 35.2	29.38	22 48.3
22	14 19 42.82	12.009	12 19 36.6	63.67	22 14.8	22	16 52 17.30	.393	21 56 1.1	27.77	22 49.7
23	14 24 31.55	.051	12 44 56.1	62.94	22 15.7	23	16 57 39.15	.429	22 6 48.0	26.13	22 51.1
24	14 29 21.29	.095	13 9 57.6	62.17	22 16.6	24	17 3 1.82	.461	22 16 55.4	24.47	22 52.6
25	14 34 12.09	.139	13 34 40.2	61.37	22 17.6	25	17 8 25.27	.492	22 26 22.9	22.81	22 54.0
26	14 39 3.97	12.185	13 59 3.2	60.53	22 18.5	26	17 13 49.44	13.521	22 35 10.1	21.12	22 55.5
27	14 43 56.95	.230	14 23 5.8	59.67	22 19.5	27	17 19 14.28	.548	22 43 16.7	19.42	22 56.9
28	14 48 51.08	.277	14 46 47.2	58.77	22 20.4	28	17 24 39.75	.573	22 50 42.2	17.70	22 58.5
29	14 53 46.28	.322	15 10 6.7	57.84	22 21.4	29	17 30 5.78	.596	22 57 26.1	15.95	23 0.0
30	14 58 42.57	.372	15 33 3.5	56.88	22 22.4	30	17 35 32.34	.618	23 3 28.0	14.20	23 1.5
31	15 3 40.09	12.421	15 55 36.7	55.87	22 23.5	31	17 40 59.42	13.639	23 8 47.6	12.43	23 3.0
32	15 8 38.78	12.470	−16 17 45.5	54.85	22 24.5	32	17 46 27.00	13.659	−23 13 24.5	10.65	23 4.5

Day of the Month,	7th.	12th.	17th.	22d.	27th.	32d.	Day of the Month,	7th.	12th.	17th.	22d.	27th.	32d.
	″	″	″	″	″	″		″	″	″	″	″	
Semidiameter	5.9	5.8	5.7	5.7	5.6	5.5	Semidiameter	5.5	5.4	5.3	5.3	5.2	
Hor. Parallax	6.0	5.9	5.7	5.7	5.6	5.5	Hor. Parallax	5.5	5.4	5.4	5.3	5.3	

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	21 29 39.64	7.713	−16 1 4.7	38.35	2 45.3
2	21 32 44.50	.693	15 45 39.5	38.75	2 44.5
3	21 35 48.90	.674	15 30 5.1	39.13	2 43.6
4	21 38 52.84	.655	15 14 21.6	39.50	2 42.7
5	21 41 56.32	.635	14 58 29.2	39.82	2 41.8
6	21 44 59.33	7.616	14 42 28.3	40.21	2 40.9
7	21 48 1.90	.597	14 26 18.9	40.54	2 40.0
8	21 51 4.01	.579	14 10 1.2	40.91	2 39.1
9	21 54 5.68	.560	13 53 35.5	41.19	2 38.1
10	21 57 6.91	.542	13 37 2.0	41.56	2 37.2
11	22 0 7.70	7.523	13 20 20.8	41.88	2 36.2
12	22 3 8.05	.506	13 3 32.1	42.18	2 35.3
13	22 6 7.99	.469	12 46 36.2	42.48	2 34.3
14	22 9 7.51	.471	12 29 33.2	42.77	2 33.4
15	22 12 6.61	.453	12 12 23.3	43.05	2 32.4
16	22 15 5.29	7.437	11 55 6.8	43.32	2 31.5
17	22 18 3.58	.420	11 37 43.8	43.58	2 30.5
18	22 21 1.46	.405	11 20 14.6	43.84	2 29.6
19	22 23 58.97	.388	11 2 39.3	44.10	2 28.6
20	22 26 56.08	.373	10 44 58.1	44.33	2 27.6
21	22 29 52.83	7.357	10 27 11.3	44.57	2 26.6
22	22 32 49.20	.342	10 9 19.1	44.79	2 25.6
23	22 35 45.22	.325	9 51 21.7	45.00	2 24.6
24	22 38 40.85	.310	9 33 19.4	45.20	2 23.6
25	22 41 36.12	.295	9 15 12.2	45.39	2 22.5
26	22 44 31.03	7.281	8 57 0.6	45.57	2 21.5
27	22 47 25.61	.267	8 38 44.5	45.76	2 20.5
28	22 50 19.84	.253	8 20 24.4	45.92	2 19.5
29	22 53 13.74	.238	8 2 0.3	46.09	2 18.4
30	22 56 7.30	.225	7 43 32.6	46.23	2 17.4
31	22 59 0.55	7.212	7 25 1.3	46.37	2 16.3
32	23 1 53.47	7.199	− 7 6 26.7	46.50	2 15.3

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiam. ″ 2.5	″ 2.5	″ 2.5	″ 2.4	″ 2.4	″ 2.4	2.4
Hor. Par. 4.3	4.2	4.2	4.1	4.1	4.1	4.0

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	23 1 53.47	7.199	− 7 6 26.7	46.50	2 15.3
2	23 4 46.08	.185	6 47 49.1	46.62	2 14.2
3	23 7 38.37	.173	6 29 8.6	46.74	2 13.2
4	23 10 30.37	.160	6 10 25.4	46.86	2 12.1
5	23 13 22.07	.149	5 51 39.8	46.95	2 11.0
6	23 16 13.50	7.137	5 32 51.9	47.04	2 9.9
7	23 19 4.63	.125	5 14 2.1	47.12	2 8.8
8	23 21 55.51	.114	4 55 10.5	47.19	2 7.7
9	23 24 46.11	.103	4 36 17.2	47.25	2 6.6
10	23 27 36.48	.092	4 17 22.4	47.32	2 5.5
11	23 30 26.59	7.083	3 58 26.3	47.36	2 4.4
12	23 33 16.48	.072	3 39 29.0	47.40	2 3.3
13	23 36 6.12	.064	3 20 30.8	47.43	2 2.2
14	23 38 55.57	.056	3 1 31.7	47.47	2 1.0
15	23 41 44.82	.048	2 42 32.0	47.49	1 59.9
16	23 44 33.90	7.040	2 23 31.7	47.52	1 58.8
17	23 47 22.82	.033	2 4 31.2	47.52	1 57.7
18	23 50 11.57	.026	1 45 30.4	47.52	1 56.5
19	23 53 0.12	.019	1 26 29.9	47.52	1 55.4
20	23 55 48.51	.013	1 7 29.5	47.51	1 54.3
21	23 58 36.75	7.007	0 48 29.7	47.47	1 53.2
22	0 1 24.85	7.001	0 29 30.4	47.44	1 52.0
23	0 4 12.80	6.996	− 0 10 32.1	47.40	1 50.9
24	0 7 0.64	.990	+ 0 8 25.2	47.36	1 49.8
25	0 9 48.36	.986	0 27 21.1	47.31	1 48.7
26	0 12 35.98	6.982	0 46 15.6	47.25	1 47.6
27	0 15 23.49	.978	1 5 8.3	47.17	1 46.4
28	0 18 10.90	.973	1 23 59.3	47.09	1 45.3
29	0 20 58.21	.969	1 42 48.2	46.99	1 44.2
30	0 23 45.41	.966	2 1 34.9	46.90	1 43.0
31	0 26 32.53	6.962	2 20 19.2	46.79	1 41.9
32	0 29 19.58	6.959	+ 2 39 1.1	46.69	1 40.8

Day of the Month,	5th.	10th.	15th.	20th.	25th.
Semidiameter	″ 2.3	″ 2.3	″ 2.3	″ 2.3	″ 2.3
Hor. Parallax	4.0	3.9	3.9	3.9	3.8

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	0 20 58.21	6.969	+ 1 42 48.2	46.99	1 44.0	1	1 47 20.20	7.009	+10 54 58.0	41.04	1 8.1
2	0 23 45.41	.966	2 1 34.9	46.90	1 42.8	2	1 50 8.47	.014	11 11 19.4	40.74	1 7.0
3	0 26 32.53	.962	2 20 19.2	46.79	1 41.7	3	1 52 56.87	.019	11 27 33.7	40.44	1 5.9
4	0 29 19.58	.959	2 39 1.1	46.69	1 40.5	4	1 55 45.40	.024	11 43 40.6	40.13	1 4.7
5	0 32 6.57	.957	2 57 40.2	46.57	1 39.4	5	1 58 34.06	.030	11 59 40.1	39.82	1 3.6
6	0 34 53.50	6.954	3 16 16.6	46.46	1 38.2	6	2 1 22.86	7.036	12 15 32.2	39.51	1 2.5
7	0 37 40.38	.953	3 34 50.0	46.32	1 37.1	7	2 4 11.81	.043	12 31 16.5	39.18	1 1.4
8	0 40 27.23	.951	3 53 20.2	46.18	1 35.9	8	2 7 0.91	.049	12 46 53.0	38.86	1 0.2
9	0 43 14.04	.950	4 11 47.1	46.06	1 34.7	9	2 9 50.17	.056	13 2 21.8	38.53	0 59.1
10	0 46 0.84	.949	4 30 10.6	45.91	1 33.5	10	2 12 39.59	.062	13 17 42.6	38.19	0 58.0
11	0 48 47.61	6.949	4 48 30.4	45.75	1 32.4	11	2 15 29.18	7.069	13 32 55.2	37.85	0 56.9
12	0 51 34.39	.949	5 6 46.5	45.58	1 31.2	12	2 18 18.93	.077	13 47 59.8	37.51	0 55.8
13	0 54 21.16	.949	5 24 58.5	45.41	1 30.1	13	2 21 8.86	.084	14 2 55.8	37.15	0 54.7
14	0 57 7.95	.950	5 43 6.6	45.25	1 28.9	14	2 23 58.97	.092	14 17 43.2	36.79	0 53.6
15	0 59 54.74	.951	6 1 10.3	45.06	1 27.8	15	2 26 49.27	.099	14 32 22.1	36.44	0 52.5
16	1 2 41.58	6.952	6 19 9.7	44.88	1 26.6	16	2 29 39.75	7.107	14 46 52.3	36.07	0 51.4
17	1 5 28.44	.953	6 37 4.6	44.69	1 25.4	17	2 32 30.41	.114	15 1 13.7	35.71	0 50.3
18	1 8 15.35	.955	6 54 54.7	44.49	1 24.2	18	2 35 21.26	.122	15 15 26.2	35.33	0 49.2
19	1 11 2.31	.958	7 12 39.9	44.28	1 23.1	19	2 38 12.30	.131	15 29 29.6	34.95	0 48.1
20	1 13 49.33	.960	7 30 20.1	44.07	1 21.9	20	2 41 3.53	.139	15 43 23.7	34.56	0 47.0
21	1 16 36.41	6.963	7 47 55.1	43.85	1 20.8	21	2 43 54.96	7.147	15 57 8.5	34.17	0 45.9
22	1 19 23.57	.966	8 5 24.9	43.62	1 19.6	22	2 46 46.59	.155	16 10 44.0	33.78	0 44.8
23	1 22 10.80	.970	8 22 49.2	43.40	1 18.5	23	2 49 38.43	.164	16 24 9.9	33.38	0 43.7
24	1 24 58.12	.973	8 40 7.9	43.17	1 17.3	24	2 52 30.46	.173	16 37 26.1	32.97	0 42.6
25	1 27 45.52	.976	8 57 20.9	42.93	1 16.2	25	2 55 22.69	.180	16 50 32.6	32.57	0 41.5
26	1 30 33.03	6.981	9 14 28.1	42.68	1 15.0	26	2 58 15.12	7.189	17 3 29.2	32.15	0 40.4
27	1 33 20.62	.985	9 31 29.1	42.42	1 13.9	27	3 1 7.76	.197	17 16 15.6	31.72	0 39.4
28	1 36 8.32	.989	9 48 24.0	42.16	1 12.7	28	3 4 0.60	.206	17 28 52.0	31.30	0 38.3
29	1 38 56.11	.994	10 5 12.4	41.89	1 11.6	29	3 6 53.62	.213	17 41 18.1	30.87	0 37.3
30	1 41 44.03	6.999	10 21 54.4	41.61	1 10.4	30	3 9 46.84	.221	17 53 33.8	30.43	0 36.2
31	1 44 32.05	7.003	10 38 29.6	41.33	1 9.3	31	3 12 40.24	7.229	18 5 38.9	29.99	0 35.2
32	1 47 20.20	7.009	+10 54 58.0	41.04	1 8.1	32	3 15 33.83	7.237	+18 17 33.5	29.55	0 34.1

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter	2.2	2.2	2.2	2.2	2.2	2.1
Hor. Parallax	3.8	3.8	3.7	3.7	3.7	3.6

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter	2.1	2.1	2.1	2.1	2.1	2.1
Hor. Parallax	3.6	3.6	3.6	3.5	3.5	3.5

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	3 12 40.24	7.229	+18 5 38.9	29.99	0 35.2
2	3 15 33.83	.237	18 17 33.5	29.55	0 34.1
3	3 18 27.61	.244	18 29 17.4	29.10	0 33.1
4	3 21 21.56	.252	18 40 50.5	28.65	0 32.0
5	3 24 15.69	.259	18 52 12.7	28.20	0 31.0
6	3 27 10.00	7.267	19 3 24.0	27.74	0 30.0
7	3 30 4.49	.274	19 14 24.3	27.28	0 28.9
8	3 32 59.15	.281	19 25 13.7	26.83	0 27.9
9	3 35 54.00	.289	19 35 52.2	26.37	0 26.9
10	3 38 49.02	.296	19 46 19.6	25.91	0 25.9
11	3 41 44.21	7.303	19 56 35.7	25.43	0 24.8
12	3 44 39.57	.310	20 6 40.3	24.95	0 23.8
13	3 47 35.10	.317	20 16 33.3	24.47	0 22.8
14	3 50 30.78	.323	20 26 14.8	23.98	0 21.8
15	3 53 26.63	.330	20 35 44.7	23.50	0 20.8
16	3 56 22.64	7.337	20 45 2.8	23.00	0 19.8
17	3 59 18.82	.344	20 54 8.9	22.51	0 18.8
18	4 2 15.16	.351	21 3 3.2	22.02	0 17.8
19	4 5 11.67	.357	21 11 45.7	21.52	0 16.8
20	4 8 8.31	.363	21 20 16.3	21.02	0 15.8
21	4 11 5.12	7.371	21 28 34.9	20.52	0 14.8
22	4 14 2.13	.378	21 36 41.5	20.02	0 13.9
23	4 16 59.27	.383	21 44 36.0	19.52	0 12.9
24	4 19 56.50	.387	21 52 18.2	19.00	0 11.9
25	4 22 53.84	.391	21 59 48.1	18.49	0 10.9
26	4 25 51.27	7.394	22 7 5.6	17.97	0 9.9
27	4 28 48.78	.398	22 14 10.8	17.46	0 8.9
28	4 31 46.38	.402	22 21 3.5	16.94	0 7.9
29	4 34 44.06	.405	22 27 43.7	16.42	0 6.9
30	4 37 41.82	.408	22 34 11.4	15.89	0 5.9
31	4 40 39.64	7.410	22 40 26.6	15.37	0 5.0
32	4 43 37.53	7.413	+22 46 29.2	14.84	0 4.0

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage
	h. m. s.	s.	° ′ ″	″	h. m.
1	4 43 37.53	7.413	+22 46 29.2	14.84	0 4.0
2	4 46 35.47	.415	22 52 19.2	14.32	0 3.0
3	4 49 33.45	.417	22 57 56.6	13.79	0 2.0
4	4 32 31.48	.418	23 3 21.3	13.27	0 1.2
5	4 55 29.54	.419	23 8 33.3	12.74	0 0.1 23 59.1
6	4 58 27.63	7.421	23 13 32.8	12.22	23 58.1
7	5 1 25.75	.422	23 18 19.6	11.68	23 57.2
8	5 4 23.87	.422	23 22 53.6	11.15	23 56.2
9	5 7 22.00	.422	23 27 14.9	10.62	23 55.2
10	5 10 20.14	.422	23 31 23.4	10.09	23 54.2
11	5 13 18.24	7.421	23 35 19.2	9.56	23 53.2
12	5 16 16.34	.421	23 39 2.3	9.03	23 52.3
13	5 19 14.44	.420	23 42 32.6	8.49	23 51.3
14	5 22 12.51	.418	23 45 50.1	7.96	23 50.3
15	5 25 10.53	.417	23 48 54.8	7.43	23 49.3
16	5 28 8.52	7.415	23 51 46.8	6.90	23 48.4
17	5 31 6.47	.413	23 54 26.0	6.37	23 47.4
18	5 34 4.34	.410	23 56 52.4	5.83	23 46.4
19	5 37 2.15	.407	23 59 6.1	5.30	23 45.4
20	5 39 59.86	.403	24 1 7.0	4.77	23 44.5
21	5 42 57.49	7.399	24 2 55.2	4.24	23 43.5
22	5 45 55.01	.394	24 4 30.7	3.72	23 42.5
23	5 48 52.42	.389	24 5 53.5	3.19	23 41.5
24	5 51 49.70	.384	24 7 3.6	2.66	23 40.5
25	5 54 46.85	.378	24 8 1.0	2.13	23 39.5
26	5 57 43.84	7.372	24 8 45.9	1.61	23 38.5
27	6 0 40.69	.365	24 9 18.2	1.09	23 37.5
28	6 3 37.37	.358	24 9 38.0	0.57	23 36.5
29	6 6 33.88	.350	24 9 45.3	+0.04	23 35.5
30	6 9 30.19	.342	24 9 40.2	−0.47	23 34.5
31	6 12 26.31	7.334	24 9 22.6	0.99	23 33.5
32	6 15 22.23	7.326	+24 8 52.7	1.50	23 32.5

Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.
″	″	″	″	″	″	″
Semidiam. 2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hor. Par. 3.5	3.4	3.4	3.4	3.4	3.4	3.4

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	2.0	2.0	2.0	2.0	2.0	2.0
Hor. Parallax	3.4	3.4	3.3	3.3	3.3	3.3

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	6 12 26.31	7.334	+24 9 22.6	0.99	23 33.5
2	6 15 22.23	.326	24 8 52.7	1.50	23 32.5
3	6 18 17.96	.317	24 8 10.5	2.01	23 31.5
4	6 21 13.47	.309	24 7 16.0	2.52	23 30.5
5	6 24 8.77	.299	24 6 9.3	3.03	23 29.5
6	6 27 3.85	7.290	24 4 50.6	3.53	23 28.4
7	6 29 58.71	.281	24 3 19.7	4.04	23 27.4
8	6 32 53.33	.271	24 1 36.8	4.54	23 26.4
9	6 35 47.72	.261	23 59 42.0	5.03	23 25.3
10	6 38 41.86	.250	23 57 35.2	5.53	23 24.3
11	6 41 35.73	7.238	23 55 16.4	6.03	23 23.2
12	6 44 29.33	.227	23 52 45.9	6.52	23 22.1
13	6 47 22.65	.216	23 50 3.3	7.02	23 21.1
14	6 50 15.70	.204	23 47 9.0	7.50	23 20.0
15	6 53 8.48	.193	23 44 3.4	7.97	23 18.9
16	6 56 0.96	7.181	23 40 46.1	8.46	23 17.8
17	6 58 53.16	.169	23 37 17.3	8.94	23 16.8
18	7 1 45.05	.155	23 33 37.1	9.41	23 15.7
19	7 4 36.61	.142	23 29 45.6	9.88	23 14.6
20	7 7 27.86	.129	23 25 43.0	10.34	23 13.5
21	7 10 18.78	7.115	23 21 29.3	10.80	23 12.4
22	7 13 9.37	.101	23 17 4.5	11.26	23 11.3
23	7 15 59.62	.087	23 12 28.8	11.72	23 10.2
24	7 18 49.51	.072	23 7 42.2	12.17	23 9.1
25	7 21 39.06	.057	23 2 44.8	12.61	23 8.0
26	7 24 28.24	7.042	22 57 36.8	13.06	23 6.8
27	7 27 17.05	.026	22 52 18.0	13.50	23 5.7
28	7 30 5.48	7.010	22 46 48.8	13.94	23 4.6
29	7 32 53.53	6.994	22 41 9.0	14.37	23 3.4
30	7 35 41.21	.978	22 35 19.0	14.79	23 2.3
31	7 38 28.50	6.962	22 29 18.8	15.22	23 1.1
32	7 41 15.41	6.946	+22 23 8.5	15.64	23 0.0

Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hor. Par.	3.3	3.3	3.3	3.3	3.3	3.3	3.4

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	7 41 15.41	6.946	+22 23 8.5	15.64	23 0.0
2	7 44 1.92	.929	22 16 48.2	16.05	22 58.8
3	7 46 48.03	.913	22 10 18.1	16.46	22 57.6
4	7 49 33.76	.897	22 3 38.2	16.86	22 56.4
5	7 52 19.10	.881	21 56 48.6	17.27	22 55.2
6	7 55 4.03	6.864	21 49 49.3	17.67	22 54.0
7	7 57 48.56	.847	21 42 40.5	18.06	22 52.8
8	8 0 32.69	.830	21 35 22.0	18.46	22 51.6
9	8 3 16.43	.814	21 27 54.3	18.84	22 50.4
10	8 5 59.75	.797	21 20 17.2	19.23	22 49.2
11	8 8 42.68	6.780	21 12 31.0	19.61	22 48.0
12	8 11 25.21	.763	21 4 35.7	19.99	22 46.7
13	8 14 7.32	.746	20 56 31.5	20.36	22 45.4
14	8 16 49.02	.729	20 48 18.4	20.72	22 44.2
15	8 19 30.31	.712	20 39 56.7	21.08	22 42.9
16	8 22 11.19	6.694	20 31 26.4	21.44	22 41.6
17	8 24 51.65	.677	20 22 47.7	21.79	22 40.4
18	8 27 31.69	.659	20 14 0.6	22.13	22 39.1
19	8 30 11.32	.642	20 5 5.2	22.47	22 37.8
20	8 32 50.51	.624	19 56 1.7	22.81	22 36.5
21	8 35 29.29	6.607	19 46 50.1	23.14	22 35.2
22	8 38 7.63	.589	19 37 30.6	23.47	22 33.9
23	8 40 45.55	.571	19 28 3.2	23.80	22 32.6
24	8 43 23.03	.553	19 18 28.0	24.12	22 31.3
25	8 46 0. 9	.535	19 8 45.2	24.44	22 30.0
26	8 48 36.71	6.517	18 58 54.7	24.75	22 28.6
27	8 51 12.92	.500	18 48 57.0	25.05	22 27.3
28	8 53 48.70	.482	18 38 51.9	25.36	22 25.9
29	8 56 24.04	.463	18 28 39.8	25.65	22 24.6
30	8 58 58.93	.445	18 18 20.7	25.94	22 23.2
31	9 1 33.40	6.427	18 7 54.7	26.22	22 21.8
32	9 4 7.46	6.411	+17 57 22.0	26.50	22 20.4

Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiam.	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Hor. Par.	3.4	3.4	3.4	3.4	3.4	3.4	3.5

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ′ ″	″	h. m.
1	9 4 7.46	6.411	+17 57 22.0	26.50	22 20.4
2	9 6 41.13	.394	17 46 42.6	26.77	22 19.0
3	9 9 14.37	.375	17 35 56.7	27.04	22 17.6
4	9 11 47.20	.359	17 25 4.3	27.31	22 16.2
5	9 14 19.62	.342	17 14 5.6	27.57	22 14.8
6	9 16 51.65	6.326	17 3 0.6	27.83	22 13.4
7	9 19 23.28	.309	16 51 49.5	28.09	22 12.0
8	9 21 54.51	.293	16 40 32.3	28.34	22 10.6
9	9 24 25.34	.277	16 29 9.1	28.59	22 9.1
10	9 26 55.79	.260	16 17 40.0	28.83	22 7.7
11	9 29 25.84	6.245	16 6 5.1	29.07	22 6.2
12	9 31 55.51	.228	15 54 24.5	29.31	22 4.7
13	9 34 24.78	.212	15 42 38.4	29.53	22 3.3
14	9 36 53.67	.196	15 30 46.8	29.76	22 1.8
15	9 39 22.18	.180	15 18 49.8	29.98	22 0.4
16	9 41 50.30	6.164	15 6 47.7	30.19	21 58.9
17	9 44 18.03	.147	14 54 40.5	30.40	21 57.4
18	9 46 45.39	.132	14 42 28.4	30.60	21 55.9
19	9 49 12.37	.116	14 30 11.5	30.80	21 54.4
20	9 51 38.97	.101	14 17 49.9	30.99	21 52.9
21	9 54 5.20	6.085	14 5 23.7	31.18	21 51.4
22	9 56 31.06	.069	13 52 53.1	31.37	21 49.9
23	9 58 56.54	.054	13 40 18.1	31.54	21 48.4
24	10 1 21.66	.039	13 27 38.8	31.72	21 46.8
25	10 3 46.41	.024	13 14 55.4	31.89	21 45.3
26	10 6 10.81	6.009	13 2 8.0	32.05	21 43.8
27	10 8 34.84	5.994	12 49 16.7	32.22	21 42.3
28	10 10 58.53	.960	12 36 21.5	32.37	21 40.7
29	10 13 21.87	.965	12 23 22.6	32.53	21 39.1
30	10 15 44.87	.951	12 10 20.0	32.68	21 37.6
31	10 18 7.52	5.937	11 57 13.8	32.83	21 36.0
32	10 20 29.86	5.924	+11 44 4.2	32.97	21 34.5

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	
Semidiameter	2.1	2.1	2.1	2.1	2.1	2.1
Hor. Parallax	3.5	3.5	3.5	3.6	3.6	3.6

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ′ ″	″	h. m.
1	10 18 7.52	5.937	+11 57 13.8	32.83	21 36.0
2	10 20 29.86	.924	11 44 4.2	32.97	21 34.5
3	10 22 51.89	.911	11 30 51.2	33.11	21 32.9
4	10 25 13.60	.898	11 17 34.9	33.24	21 31.3
5	10 27 34.99	.984	11 4 15.5	33.37	21 29.7
6	10 29 56.07	5.872	10 50 53.1	33.49	21 28.1
7	10 32 16.84	.859	10 37 27.6	33.62	21 26.5
8	10 34 37.32	.847	10 23 59.3	33.74	21 24.9
9	10 36 57.48	.834	10 10 28.1	33.85	21 23.3
10	10 39 17.37	.822	9 56 54.3	33.96	21 21.7
11	10 41 36.95	5.810	9 43 18.0	34.06	21 20.0
12	10 43 56.26	.798	9 29 39.2	34.16	21 18.4
13	10 46 15.27	.786	9 15 58.1	34.26	21 16.8
14	10 48 34.00	.774	9 2 14.7	34.35	21 15.2
15	10 50 52.45	.763	8 58 29.2	34.44	21 13.5
16	10 53 10.62	5.751	8 34 41.7	34.52	21 11.9
17	10 55 28.50	.739	8 20 52.1	34.60	21 10.2
18	10 57 46.12	.728	8 7 0.9	34.67	21 8.6
19	11 0 3.46	.717	7 53 7.9	34.74	21 6.9
20	11 2 20.55	.706	7 39 13.5	34.80	21 5.3
21	11 4 37.36	5.695	7 25 17.5	34.86	21 3.6
22	11 6 53.92	.684	7 11 20.2	34.91	21 2.0
23	11 9 10.21	.673	6 57 21.6	34.96	21 0.3
24	11 11 26.24	.662	6 43 22.0	35.00	20 58.7
25	11 13 42.00	.652	6 29 21.3	35.05	20 57.0
26	11 15 57.53	5.642	6 15 19.7	35.09	20 55.3
27	11 18 12.81	.632	6 1 17.2	35.12	20 53.6
28	11 20 27.86	.622	5 47 13.9	35.15	20 51.9
29	11 22 42.66	.612	5 33 9.9	35.18	20 50.2
30	11 24 57.24	.603	5 19 5.2	35.21	20 48.5
31	11 27 11.61	5.594	5 5 0.0	35.22	20 46.8
32	11 29 25.77	5.585	+ 4 50 54.3	35.24	20 45.1

Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter	2.2	2.2	2.2	2.3	2.3	2.3
Hor. Parallax	3.7	3.7	3.8	3.8	3.9	4.0

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	11 29 25.77	5.585	+ 4 50 54.3	35.24	20 45.1
2	11 31 39.70	.576	4 36 48.2	35.26	20 43.4
3	11 33 53.44	.568	4 22 41.8	35.27	20 41.6
4	11 36 6.97	.559	4 8 35.1	35.28	20 39.9
5	11 38 20.30	.551	3 54 28.4	35.28	20 38.2
6	11 40 33.42	5.542	3 40 21.6	35.28	20 36.5
7	11 42 46.35	.535	3 26 15.0	35.27	20 34.7
8	11 44 59.10	.527	3 12 8.4	35.26	20 33.0
9	11 47 11.65	.518	2 58 2.2	35.25	20 31.3
10	11 49 23.99	.510	2 43 56.3	35.24	20 29.5
11	11 51 36.16	5.503	2 29 50.9	35.21	20 27.8
12	11 53 48.13	.495	2 15 46.1	35.19	20 26.0
13	11 55 59.93	.487	2 1 42.0	35.15	20 24.3
14	11 58 11.52	.479	1 47 38.7	35.11	20 22.5
15	12 0 22.94	.472	1 33 36.3	35.08	20 20.8
16	12 2 34.17	5.464	1 19 34.9	35.04	20 19.0
17	12 4 45.23	.457	1 5 34.6	34.99	20 17.3
18	12 6 56.10	.449	0 51 35.5	34.94	20 15.5
19	12 9 6.79	.442	0 37 37.7	34.88	20 13.8
20	12 11 17.30	.434	0 23 41.4	34.82	20 12.0
21	12 13 27.63	5.426	+ 0 9 46.6	34.75	20 10.3
22	12 15 37.76	.419	− 0 4 6.7	34.68	20 8.5
23	12 17 47.74	.412	0 17 58.2	34.61	20 6.7
24	12 19 57.54	.405	0 31 47.9	34.53	20 4.9
25	12 22 7.18	.398	0 45 35.9	34.46	20 3.1
26	12 24 16.65	5.391	0 59 21.9	34.38	20 1.3
27	12 26 25.96	.384	1 13 6.0	34.29	19 59.5
28	12 28 35.10	.377	1 26 48.1	34.21	19 57.7
29	12 30 44.07	.370	1 40 28.0	34.12	19 55.9
30	12 32 52.88	.364	1 54 5.9	34.03	19 54.1
31	12 35 1.54	5.358	2 7 41.4	33.93	19 52.3
32	12 37 10.06	5.352	− 2 21 14.7	33.83	19 50.5

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	
Semidiameter	2.4	2.4	2.5	2.5	2.6	2.6
Hor. Parallax	4.0	4.1	4.2	4.3	4.4	4.5

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	12 35 1.54	5.358	− 2 7 41.4	33.93	19 52.3
2	12 37 10.06	.352	2 21 14.7	33.83	19 50.5
3	12 39 18.45	.347	2 34 45.4	33.73	19 48.7
4	12 41 26.69	.340	2 48 13.6	33.62	19 46.9
5	12 43 34.78	.334	3 1 39.2	33.51	19 45.1
6	12 45 42.72	5.328	3 15 2.2	33.40	19 43.3
7	12 47 50.51	.321	3 28 22.5	33.29	19 41.5
8	12 49 58.14	.314	3 41 39.9	33.17	19 39.7
9	12 52 5.61	.308	3 54 54.4	33.04	19 37.9
10	12 54 12.92	.301	4 8 5.8	32.91	19 36.1
11	12 56 20.08	5.295	4 21 14.0	32.77	19 34.3
12	12 58 27.06	.287	4 34 19.0	32.64	19 32.4
13	13 0 33.88	.281	4 47 20.6	32.49	19 30.6
14	13 2 40.54	.274	5 0 18.7	32.35	19 28.8
15	13 4 47.03	.267	5 13 13.3	32.20	19 26.9
16	13 6 53.34	5.259	5 26 4.3	32.04	19 25.1
17	13 8 59.48	.252	5 38 51.5	31.89	19 23.2
18	13 11 5.44	.244	5 51 35.0	31.73	19 21.4
19	13 13 11.22	.237	6 4 14.5	31.57	19 19.5
20	13 15 16.81	.229	6 16 50.2	31.40	19 17.7
21	13 17 22.20	5.220	6 29 21.7	31.22	19 15.8
22	13 19 27.39	.212	6 41 49.0	31.05	19 14.0
23	13 21 32.38	.204	6 54 12.3	30.88	19 12.1
24	13 23 37.17	.195	7 6 31.3	30.70	19 10.3
25	13 25 41.77	.187	7 18 46.0	30.52	19 8.4
26	13 27 46.16	5.179	7 30 56.3	30.34	19 6.5
27	13 29 50.35	.170	7 43 2.3	30.16	19 4.6
28	13 31 54.33	.162	7 55 3.9	29.97	19 2.8
29	13 33 58.11	.153	8 7 0.9	29.78	19 0.9
30	13 36 1.68	.144	8 18 53.3	29.59	18 59.0
31	13 38 5.06	5.137	8 30 41.2	29.40	18 57.1
32	13 40 8.24	5.128	− 8 42 24.6	29.22	18 55.2

Day of the Month,	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter	2.7	2.7	2.8	2.9	3.0	3.1
Hor. Parallax	4.6	4.7	4.8	4.9	5.0	5.2

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	0 8 15.09	1.096	− 0 30 44.7	7.82	5 23.1	1	0 25 58.87	1.718	+ 1 31 36.6	11.59	3 38.9
2	0 8 41.69	.121	0 27 35.2	7.97	5 19.6	2	0 26 40.29	.733	1 36 15.9	.68	3 35.6
3	0 9 8.88	.145	0 24 22.0	8.12	5 16.2	3	0 27 22.08	.748	1 40 57.2	.77	3 32.4
4	0 9 36.64	.169	0 21 5.3	.27	5 12.7	4	0 28 4.22	.763	1 45 40.5	.85	3 29.2
5	0 10 4.98	.193	0 17 45.0	.42	5 9.2	5	0 28 46.72	.778	1 50 25.8	11.93	3 26.0
6	0 10 33.88	1.216	0 14 21.2	8.57	5 5.8	6	0 29 29.56	1.792	1 55 13.1	12.01	3 22.8
7	0 11 3.33	.238	0 10 54.0	.71	5 2.4	7	0 30 12.74	.806	2 0 2.2	.09	3 19.6
8	0 11 33.32	.261	0 7 23.4	.85	4 58.9	8	0 30 56.25	.820	2 4 53.2	.16	3 16.4
9	0 12 3.85	.283	0 3 49.5	8.98	4 55.5	9	0 31 40.09	.834	2 9 46.0	.24	3 13.2
10	0 12 34.90	.305	− 0 0 12.3	9.11	4 52.1	10	0 32 24.26	.847	2 14 40.5	.31	3 10.0
11	0 13 6.48	1.326	+ 0 3 28.0	9.24	4 48.7	11	0 33 8.75	1.860	2 19 36.8	12.38	3 6.8
12	0 13 38.58	.348	0 7 11.5	.37	4 45.3	12	0 33 53.55	.873	2 24 34.7	.45	3 3.6
13	0 14 11.18	.369	0 10 58.1	.50	4 41.9	13	0 34 38.66	.886	2 29 34.3	.52	3 0.4
14	0 14 44.28	.390	0 14 47.8	.63	4 38.5	14	0 35 24.07	.898	2 34 35.4	.58	2 57.2
15	0 15 17.89	.411	0 18 40.5	.76	4 35.1	15	0 36 9.77	.910	2 39 38.1	.64	2 54.0
16	0 15 51.99	1.431	0 22 36.2	9.88	4 31.8	16	0 36 55.77	1.922	2 44 42.3	12.70	2 50.9
17	0 16 26.57	.451	0 26 34.9	10.00	4 28.4	17	0 37 42.05	.934	2 49 48.0	.76	2 47.7
18	0 17 1.63	.471	0 30 36.5	.12	4 25.1	18	0 38 28.62	.946	2 54 55.1	.82	2 44.5
19	0 17 37.15	.490	0 34 40.9	.23	4 21.7	19	0 39 15.46	.957	3 0 3.6	.88	2 41.4
20	0 18 13.14	.509	0 38 48.2	.35	4 18.4	20	0 40 2.57	.968	3 5 13.5	.93	2 38.3
21	0 18 49.59	1.528	0 42 58.2	10.47	4 15.1	21	0 40 49.95	1.979	3 10 24.7	12.99	2 35.1
22	0 19 26.49	.547	0 47 11.0	.59	4 11.8	22	0 41 37.58	1.990	3 15 37.1	13.04	2 32.0
23	0 20 3.84	.565	0 51 26.4	.70	4 8.5	23	0 42 25.47	2.000	3 20 50.7	.09	2 28.8
24	0 20 41.63	.583	0 55 44.4	.81	4 5.2	24	0 43 13.61	.010	3 26 5.5	.14	2 25.7
25	0 21 19.85	.601	1 0 5.0	10.91	4 1.9	25	0 44 1.98	.020	3 31 21.4	.19	2 22.5
26	0 21 58.49	1.619	1 4 28.1	11.01	3 58.6	26	0 44 50.59	2.030	3 36 38.3	13.23	2 19.4
27	0 22 37.55	.636	1 8 53.7	.11	3 55.3	27	0 45 39.43	.039	3 41 56.3	.27	2 16.3
28	0 23 17.02	.653	1 13 21.7	.21	3 52.0	28	0 46 28.49	.048	3 47 15.2	.31	2 13.2
29	0 23 56.90	.670	1 17 52.0	.31	3 48.7	29	0 47 17.77	.057	3 52 35.1	.35	2 10.1
30	0 24 37.17	.686	1 22 24.6	.41	3 45.4	30	0 48 7.26	.066	3 57 55.8	.38	2 7.0
31	0 25 17.83	1.702	1 26 59.5	11.50	3 42.2	31	0 48 56.96	2.074	4 3 17.3	13.42	2 3.9
32	0 25 58.87	1.718	+ 1 31 36.6	11.59	3 38.9	32	0 49 46.86	2.082	+ 4 8 39.7	13.45	2 0.8

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	18.5	18.0	17.5	17.0	Polar Semidiameter	17.0	16.6	16.3	16.1
Horizontal Parallax	1.7	1.7	1.6	1.6	Horizontal Parallax	1.6	1.6	1.5	1.5

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ′ ″	″	h. m.
1	0 47 17.77	2.057	+ 3 52 35.1	13.35	2 10.1
2	0 48 7.26	.066	3 57 55.8	.38	2 7.0
3	0 48 56.96	.074	4 3 17.3	.42	2 3.9
4	0 49 46.86	.082	4 8 39.7	.45	2 0.8
5	0 50 36.95	.090	4 14 2.8	.48	1 57.7
6	0 51 27.23	2.098	4 19 26.6	13.51	1 54.6
7	0 52 17.69	.106	4 24 51.1	.54	1 51.5
8	0 53 8.33	.113	4 30 16.2	.56	1 48.4
9	0 53 59.15	.121	4 35 41.9	.58	1 45.3
10	0 54 50.14	.128	4 41 8.1	.60	1 42.2
11	0 55 41.29	2.135	4 46 34.9	13.62	1 39.1
12	0 56 32.61	.142	4 52 2.1	.64	1 36.0
13	0 57 24.08	.149	4 57 29.7	.66	1 32.9
14	0 58 15.71	.155	5 2 57.8	.67	1 29.8
15	0 59 7.49	.161	5 8 26.2	.69	1 26.8
16	0 59 59.42	2.167	5 13 55.0	13.70	1 23.7
17	1 0 51.49	.173	5 19 24.1	.71	1 20.7
18	1 1 43.69	.178	5 24 53.4	.72	1 17.6
19	1 2 36.02	.184	5 30 23.0	.73	1 14.5
20	1 3 28.49	.189	5 35 52.8	.74	1 11.5
21	1 4 21.08	2.194	5 41 22.8	13.75	1 8.4
22	1 5 13.79	.199	5 46 52.9	.75	1 5.4
23	1 6 6.61	.204	5 52 23.1	.76	1 2.3
24	1 6 59.53	.208	5 57 53.3	.76	0 59.3
25	1 7 52.55	.212	6 3 23.6	.76	0 56.2
26	1 8 45.68	2.216	6 8 53.8	13.76	0 53.1
27	1 9 38.90	.220	6 14 24.0	.75	0 50.1
28	1 10 32.22	.223	6 19 54.0	.75	0 47.0
29	1 11 25.63	.227	6 25 23.9	.74	0 44.0
30	1 12 19.11	.230	6 30 53.6	.73	0 41.0
31	1 13 12.67	2.233	6 36 23.1	13.72	0 37.9
32	1 14 6.29	2.236	+ 6 41 52.3	13.71	0 34.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	16.1	16.0	15.8	15.7
Horizontal Parallax	1.5	1.5	1.5	1.4

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h. m. s.	s.	° ′ ″	″	h. m.
1	1 14 6.29	2.236	+ 6 41 52.3	13.71	0 34.9
2	1 14 59.98	.238	6 47 21.2	.70	0 31.8
3	1 15 53.72	.240	6 52 49.8	.68	0 28.8
4	1 16 47.52	.242	6 58 18.0	.67	0 25.7
5	1 17 41.37	.244	7 3 45.7	.65	0 22.7
6	1 18 35.27	2.246	7 9 13.0	13.63	0 19.7
7	1 19 29.22	.248	7 14 39.8	.61	0 16.6
8	1 20 23.20	.250	7 20 6.2	.59	0 13.6
9	1 21 17.22	.251	7 25 32.0	.56	0 10.6
10	1 22 11.27	.253	7 30 57.3	.54	0 7.5
11	1 23 5.35	2.254	7 36 22.0	13.52	0 4.5
12	1 23 59.46	.255	7 41 46.1	.50	{ 0 1.5 } { 23 58.4 }
13	1 24 53.59	.256	7 47 9.6	.47	23 55.4
14	1 25 47.74	.256	7 52 32.4	.44	23 52.4
15	1 26 41.90	.257	7 57 54.6	.41	23 49.3
16	1 27 36.07	2.257	8 3 16.1	13.38	23 46.3
17	1 28 30.25	.257	8 8 36.8	.35	23 43.3
18	1 29 24.43	.257	8 13 56.8	.32	23 40.2
19	1 30 18.61	.257	8 19 15.9	.28	23 37.2
20	1 31 12.78	.257	8 24 34.2	.25	23 34.2
21	1 32 6.94	2.256	8 29 51.6	13.21	23 31.1
22	1 33 1.08	.256	8 35 8.1	.17	23 28.1
23	1 33 55.20	.255	8 40 23.7	.13	23 25.1
24	1 34 49.30	.254	8 45 38.4	.09	23 22.0
25	1 35 43.36	.252	8 50 52.0	.05	23 19.0
26	1 36 37.38	2.251	8 56 4.6	13.01	23 16.0
27	1 37 31.37	.249	9 1 16.1	12.96	23 12.9
28	1 38 25.32	.247	9 6 26.5	.91	23 9.9
29	1 39 19.21	.244	9 11 35.7	.86	23 6.9
30	1 40 13. 5	.242	9 16 43.8	.81	23 3.8
31	1 41 6.82	2.239	9 21 50.6	12.76	23 0.8
32	1 42 0.53	2.236	+ 9 26 56.2	12.71	22 57.7

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	15.7	15.6	15.6	15.7
Horizontal Parallax	1.4	1.4	1.4	1.4

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	1 41 6.82	2.239	+ 9 21 50.6	12.76	23 0.8
2	1 42 0.53	.236	9 26 56.2	.71	22 57.7
3	1 42 54.17	.233	9 32 0.5	.66	22 54.7
4	1 43 47.74	.230	9 37 3.6	.61	22 51.6
5	1 44 41.23	.227	9 42 5.4	.56	22 48.6
6	1 45 34.64	2.224	9 47 5.9	12.50	22 45.5
7	1 46 27.96	.220	9 52 5.0	.44	22 42.5
8	1 47 21.19	.216	9 57 2.8	.38	22 39.4
9	1 48 14.33	.212	10 1 59.2	.32	22 36.4
10	1 49 7.37	.208	10 6 54.2	.26	22 33.3
11	1 50 0.32	2.204	10 11 47.8	12.20	22 30.3
12	1 50 53.17	.200	10 16 39.9	.14	22 27.2
13	1 51 45.91	.195	10 21 30.6	.08	22 24.2
14	1 52 38.54	.190	10 26 19.8	12.02	22 21.1
15	1 53 31.06	.185	10 31 7.5	11.95	22 18.1
16	1 54 23.45	2.180	10 35 53.6	11.88	22 15.0
17	1 55 15.72	.175	10 40 38.2	.82	22 11.9
18	1 56 7.86	.169	10 45 21.2	.76	22 8.9
19	1 56 59.85	.163	10 50 2.5	.69	22 5.8
20	1 57 51.70	.157	10 54 42.2	.62	22 2.7
21	1 58 43.40	2.151	10 59 20.2	11.55	21 59.7
22	1 59 34.95	.145	11 3 56.5	.48	21 56.6
23	2 0 26.34	.138	11 8 31.1	.40	21 53.5
24	2 1 17.57	.131	11 13 3.9	.33	21 50.4
25	2 2 8.62	.124	11 17 34.9	.25	21 47.3
26	2 2 59.50	2.116	11 22 4.1	11.18	21 44.2
27	2 3 50.19	.108	11 26 31.5	.10	21 41.1
28	2 4 40.70	.100	11 30 57.0	11.02	21 38.0
29	2 5 31.01	.092	11 35 20.6	10.94	21 34.9
30	2 6 21.12	.084	11 39 42.3	.86	21 31.8
31	2 7 11.04	2.075	11 44 2.0	10.78	21 28.7
32	2 8 0.75	2.067	+11 48 19.8	10.70	21 25.6

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	2 8 0.75	2.067	+11 48 19.8	10.70	21 25.6
2	2 8 50.25	.058	11 52 35.6	.62	21 22.5
3	2 9 39.53	.049	11 56 49.4	.54	21 19.3
4	2 10 28.59	.040	12 1 1.2	.45	21 16.2
5	2 11 17.43	.031	12 5 11.0	.47	21 13.1
6	2 12 6.03	2.021	12 9 18.7	10.28	21 10.0
7	2 12 54.40	.011	12 13 24.4	.20	21 6.8
8	2 13 42.53	2.001	12 17 28.1	.11	21 3.7
9	2 14 30.41	1.991	12 21 29.7	10.03	21 0.6
10	2 15 18.04	.980	12 25 29.2	9.94	20 57.4
11	2 16 5.42	1.969	12 29 26.5	9.85	20 54.3
12	2 16 52.53	.958	12 33 21.7	.76	20 51.1
13	2 17 39.37	.947	12 37 14.8	.67	20 48.0
14	2 18 25.94	.935	12 41 5.6	.58	20 44.8
15	2 19 12.23	.923	12 44 54.2	.49	20 41.6
16	2 19 58.23	1.911	12 48 40.6	9.39	20 38.5
17	2 20 43.94	.899	12 52 24.7	.30	20 35.3
18	2 21 29.35	.886	12 56 6.6	.20	20 32.1
19	2 22 14.46	.873	12 59 46.1	.10	20 28.9
20	2 22 59.24	.859	13 3 23.3	9.00	20 25.7
21	2 23 43.70	1.846	13 6 58.1	8.94	20 22.5
22	2 24 27.83	.832	13 10 30.5	.80	20 19.3
23	2 25 11.63	.818	13 14 0.6	.70	20 16.1
24	2 25 55.09	.803	13 17 28.2	.60	20 12.9
25	2 26 38.21	.789	13 20 53.4	.50	20 9.6
26	2 27 20.97	1.774	13 24 16.2	8.40	20 6.4
27	2 28 3.37	.759	13 27 36.5	.30	20 3.2
28	2 28 45.41	.743	13 30 54.3	.19	20 0.0
29	2 29 27.07	.728	13 34 9.6	8.09	19 56.7
30	2 30 8.35	.712	13 37 22.3	7.98	19 53.5
31	2 30 49.24	1.696	13 40 32.5	7.87	19 50.2
32	2 31 29.73	1.679	+13 43 40.1	7.76	19 46.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	15.7	15.8	16.0	16.2
Horizontal Parallax	1.4	1.5	1.5	1.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	16.2	16.5	16.8	17.2
Horizontal Parallax	1.5	1.5	1.6	1.6

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	2 30 49.24	1.696	+13 40 32.5	7.87	19 50.2
2	2 31 29.73	.679	13 43 40.1	.76	19 46.9
3	2 32 9.81	.662	13 46 45.1	.66	19 43.7
4	2 32 49.49	.644	13 49 47.6	.55	19 40.4
5	2 33 28.75	.627	13 52 47.4	.44	19 37.1
6	2 34 7.59	1.609	13 55 44.7	7.33	19 33.8
7	2 34 46.00	.591	13 58 39.3	.22	19 30.5
8	2 35 23.98	.573	14 1 31.3	.11	19 27.2
9	2 36 1.53	.555	14 4 20.6	7.00	19 23.9
10	2 36 38.63	.537	14 7 7.2	6.89	19 20.5
11	2 37 15.29	1.518	14 9 51.1	6.78	19 17.2
12	2 37 51.49	.499	14 12 32.2	.66	19 13.9
13	2 38 27.23	.480	14 15 10.7	.55	19 10.5
14	2 39 2.50	.460	14 17 46.5	.43	19 7.2
15	2 39 37.29	.439	14 20 19.5	.32	19 3.8
16	2 40 11.59	1.418	14 22 49.7	6.20	19 0.4
17	2 40 45.38	.397	14 25 17.1	6.08	18 57.1
18	2 41 18.66	.376	14 27 41.7	5.96	18 53.7
19	2 41 51.43	.354	14 30 3.4	.84	18 50.3
20	2 42 23.67	.332	14 32 22.2	.72	18 46.9
21	2 42 55.38	1.310	14 34 38.1	5.60	18 43.5
22	2 43 26.54	.287	14 36 51.1	.48	18 40.0
23	2 43 57.15	.264	14 39 1.1	.36	18 36.6
24	2 44 27.21	.241	14 41 8.2	.24	18 33.2
25	2 44 56.71	.218	14 43 12.3	5.12	18 29.7
26	2 45 25.64	1.194	14 45 13.5	4.99	18 26.3
27	2 45 54.00	.170	14 47 11.7	.87	18 22.8
28	2 46 21.77	.145	14 49 6.9	.74	18 19.3
29	2 46 48.95	.120	14 50 59.1	.62	18 15.8
30	2 47 15.54	.095	14 52 48.3	.49	18 12.3
31	2 47 41.52	1.070	14 54 34.5	4.36	18 8.8
32	2 48 6.89	1.044	+14 56 17.6	4.23	18 5.3

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	17.2	17.7	18.2	18.7
Horizontal Parallax	1.6	1.6	1.6	1.7

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	2 48 6.89	1.044	+14 56 17.6	4.23	18 5.3
2	2 48 31.64	1.018	14 57 57.6	4.10	18 1.8
3	2 48 55.77	0.992	14 59 34.6	3.97	17 58.2
4	2 49 19.27	.966	15 1 8.5	.85	17 54.7
5	2 49 42.13	.939	15 2 39.3	.72	17 51.2
6	2 50 4.35	0.912	15 4 7.0	3.59	17 47.6
7	2 50 25.91	.885	15 5 31.7	.46	17 44.0
8	2 50 46.82	.858	15 6 53.3	.33	17 40.4
9	2 51 7.06	.830	15 8 11.6	.20	17 36.8
10	2 51 26.63	.802	15 9 26.7	3.07	17 33.2
11	2 51 45.52	0.773	15 10 38.6	2.93	17 29.6
12	2 52 3.72	.744	15 11 47.3	.80	17 25.9
13	2 52 21.22	.715	15 12 52.7	.66	17 22.3
14	2 52 38.02	.686	15 13 54.9	.53	17 18.6
15	2 52 54.10	.656	15 14 53.9	.39	17 14.9
16	2 53 9.47	0.626	15 15 49.6	2.26	17 11.2
17	2 53 24.12	.595	15 16 42.0	2.12	17 7.5
18	2 53 38.03	.565	15 17 31.2	1,98	17 3.8
19	2 53 51.20	.534	15 18 17.0	.84	17 0.1
20	2 54 3.63	.503	15 18 59.5	.70	16 56.3
21	2 54 15.31	0.471	15 19 38.7	1.56	16 52.6
22	2 54 26.24	.440	15 20 14.5	.42	16 48.9
23	2 54 36.41	.408	15 20 47.0	.28	16 45.1
24	2 54 45,82	.376	15 21 16.1	.14	16 41.3
25	2 54 54.46	.344	15 21 41.8	1.00	16 37.5
26	2 55 2.32	0.312	15 22 4.2	0.86	16 33.7
27	2 55 9.41	.279	15 22 23.2	.72	16 29.9
28	2 55 15.72	.247	15 22 38.8	.58	16 26.1
29	2 55 21.25	.214	15 22 51.1	.44	16 22.2
30	2 55 26.00	.182	15 23 0.0	.30	16 18.3
31	2 55 29.97	0.149	15 23 5.6	0.16	16 14.4
32	2 55 33.16	0.116	+15 23 7.8	0.02	16 10.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	
Polar Semidiameter	18.8	19.4	20.0	20.6
Horizontal Parallax	1.7	1.8	1.8	1.9

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	2 55 33.16	0.116	+15 23 7.8	0.02	16 10.5
2	2 55 35.55	.083	15 23 6.7	.12	16 6.6
3	2 55 37.15	.050	15 23 2.2	.26	16 2.7
4	2 55 37.96	.017	15 22 54.3	.40	15 58.8
5	2 55 37.97	.016	15 22 43.1	.54	15 54.8
6	2 55 37.19	0.049	15 22 28.5	0.68	15 50.9
7	2 55 35.61	.083	15 22 10.5	.82	15 46.9
8	2 55 33.23	.116	15 21 49.2	0.96	15 42.9
9	2 55 30.05	.149	15 21 24.5	1.10	15 39.0
10	2 55 26.07	.182	15 20 56.4	.24	15 35.0
11	2 55 21.30	0.216	15 20 24.9	1.38	15 31.0
12	2 55 15.72	.249	15 19 50.0	.52	15 26.9
13	2 55 9.34	.283	15 19 11.8	.66	15 22.9
14	2 55 2.16	.316	15 18 30.2	.80	15 18.8
15	2 54 54.18	.349	15 17 45.2	1.94	15 14.7
16	2 54 45.40	0.382	15 16 56.9	2.08	15 10.7
17	2 54 35.83	.415	15 16 5.3	.22	15 6.6
18	2 54 25.48	.448	15 15 10.4	.36	15 2.4
19	2 54 14.35	.480	15 14 12.2	.50	14 58.3
20	2 54 2.45	.512	15 13 10.8	.63	14 54.2
21	2 53 49.78	0.544	15 12 6.1	2.76	14 50.1
22	2 53 36.36	.575	15 10 58.3	2.89	14 45.9
23	2 53 22.19	.606	15 9 47.4	3.02	14 41.7
24	2 53 7.27	.637	15 8 33.3	.15	14 37.5
25	2 52 51.62	.667	15 7 16.2	.28	14 33.3
26	2 52 35.24	0.697	15 5 56.0	3.40	14 29.1
27	2 52 18.15	.727	15 4 32.9	.53	14 24.9
28	2 52 0.35	.756	15 3 6.8	.65	14 20.7
29	2 51 41.86	.785	15 1 37.8	.77	14 16.5
30	2 51 22.69	.813	15 0 6.0	3.89	14 12.2
31	2 51 2.85	0.841	14 58 31.3	4.01	14 7.9
32	2 50 42.35	0.868	+14 56 53.8	4.12	14 3.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	20.7	21.4	22.0	22.5
Horizontal Parallax	1.9	1.9	2.0	2.1

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	2 51 2.85	0.841	+14 58 31.3	4.01	14 7.9
2	2 50 42.35	.868	14 56 53.8	.12	14 3.6
3	2 50 21.21	.895	14 55 13.6	.23	13 59.3
4	2 49 59.43	.921	14 53 30.6	.34	13 55.0
5	2 49 37.03	.946	14 51 45.0	.45	13 50.7
6	2 49 14.03	0.971	14 49 56.8	4.56	13 46.4
7	2 48 50.44	0.995	14 48 6.1	.66	13 42.1
8	2 48 26.26	1.019	14 46 12.9	.76	13 37.7
9	2 48 1.52	.042	14 44 17.3	.86	13 33.4
10	2 47 36.23	.065	14 42 19.4	4.96	13 29.0
11	2 47 10.41	1.087	14 40 19.1	5.06	13 24.7
12	2 46 44.08	.108	14 38 16.7	.15	13 20.3
13	2 46 17.25	.128	14 36 12.1	.24	13 15.9
14	2 45 49.95	.147	14 34 5.5	.32	13 11.5
15	2 45 22.19	.165	14 31 56.9	.40	13 7.1
16	2 44 53.99	1.183	14 29 46.5	5.48	13 2.7
17	2 44 25.38	.200	14 27 34.3	.55	12 58.3
18	2 43 56.37	.216	14 25 20.3	.62	12 53.9
19	2 43 26.99	.231	14 23 4.7	.68	12 49.5
20	2 42 57.28	.245	14 20 47.6	.74	12 45.0
21	2 42 27.24	1.258	14 18 29.1	5.80	12 40.6
22	2 41 56.89	.270	14 16 9.4	.85	12 36.2
23	2 41 26.26	.281	14 13 48.5	.90	12 31.7
24	2 40 55.38	.291	14 11 26.6	.94	12 27.3
25	2 40 24.28	.300	14 9 3.7	5.98	12 22.8
26	2 39 52.98	1.308	14 6 40.0	6.01	12 18.4
27	2 39 21.49	.315	14 4 15.5	.04	12 13.9
28	2 38 49.85	.321	14 1 50.4	.06	12 9.5
29	2 38 18.08	.326	13 59 24.8	.08	12 5.1
30	2 37 46.20	.330	13 56 58.7	.09	12 0.6
31	2 37 14.24	1.333	13 54 32.3	6.10	11 56.1
32	2 36 42.22	1.335	+13 52 5.7	6.11	11 51.6

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	22.5	22.9	23.2	23.3
Horizontal Parallax	2.1	2.1	2.1	2.2

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	2 36 42.22	1.335	+13 52 5.7	6.11	11 51.6	1	2 22 11.87	0.945	+12 46 46.5	4.08	9 39.3
2	2 36 10.17	.336	13 49 39.0	.11	11 47.1	2	2 21 49.53	.919	12 45 10.2	3.95	9 35.0
3	2 35 38.10	.336	13 47 12.3	.11	11 42.7	3	2 21 27.80	.893	12 43 37.2	.81	9 30.7
4	2 35 6.04	.335	13 44 45.8	.10	11 38.2	4	2 21 6.70	.866	12 42 7.4	.67	9 26.5
5	2 34 34.02	.333	13 42 19.5	.09	11 33.8	5	2 20 46.25	.839	12 40 41.0	.53	9 22.2
6	2 34 2.06	1.330	13 39 53.6	6.07	11 29.3	6	2 20 26.46	0.811	12 39 18.0	3.39	9 17.9
7	2 33 30.18	.326	13 37 28.1	.05	11 24.8	7	2 20 7.33	.783	12 37 58.5	.24	9 13.7
8	2 32 58.41	.320	13 35 3.2	.03	11 20.4	8	2 19 48.89	.754	12 36 42.5	3.09	9 9.5
9	2 32 26.77	.315	13 32 39.0	6.00	11 15.9	9	2 19 31.14	.725	12 35 30.1	2.94	9 5.3
10	2 31 55.29	.308	13 30 15.6	5.96	11 11.5	10	2 19 14.09	.695	12 34 21.4	.79	9 1.0
11	2 31 23.99	1.300	13 27 53.1	5.92	11 7.0	11	2 18 57.77	0.665	12 33 16.4	2.63	8 56.8
12	2 30 52.90	.291	13 25 31.7	.87	11 2.6	12	2 18 42.18	.635	12 32 15.2	.47	8 52.7
13	2 30 22.03	.281	13 23 11.5	.81	10 58.2	13	2 18 27.32	.604	12 31 17.9	.31	8 48.5
14	2 29 51.42	.270	13 20 52.7	.75	10 53.7	14	2 18 13.21	.572	12 30 24.5	2.15	8 44.3
15	2 29 21.09	.258	13 18 35.3	.69	10 49.3	15	2 17 59.86	.540	12 29 35.0	1.98	8 40.1
16	2 28 51.06	1.244	13 16 19.6	5.62	10 44.8	16	2 17 47.28	0.508	12 28 49.5	1.82	8 36.0
17	2 28 21.36	.230	13 14 5.5	.55	10 40.4	17	2 17 35.47	.476	12 28 8.0	.65	8 31.9
18	2 27 52.01	.215	13 11 53.2	.47	10 36.0	18	2 17 24.44	.444	12 27 30.5	.48	8 27.8
19	2 27 23.03	.199	13 9 42.9	.39	10 31.6	19	2 17 14.19	.411	12 26 57.1	.31	8 23.7
20	2 26 54.45	.182	13 7 34.6	.30	10 27.2	20	2 17 4.78	.378	12 26 27.8	1.14	8 19.6
21	2 26 26.29	1.164	13 5 28.4	5.21	10 22.8	21	2 16 56.07	0.345	12 26 2.7	0.96	8 15.5
22	2 25 58.57	.145	13 3 24.5	.12	10 18.4	22	2 16 48.20	.312	12 25 41.7	.79	8 11.4
23	2 25 31.30	.126	13 1 22.9	5.02	10 14.0	23	2 16 41.13	.278	12 25 24.8	.62	8 7.4
24	2 25 4.51	.106	12 59 23.8	4.92	10 9.7	24	2 16 34.87	.245	12 25 12.0	.45	8 3.4
25	2 24 38.22	.085	12 57 27.3	.81	10 5.3	25	2 16 29.41	.211	12 25 3.4	.28	7 59.4
26	2 24 12.44	1.063	12 55 33.5	4.70	10 0.9	26	2 16 24.76	0.177	12 24 58.9	0.10	7 55.4
27	2 23 47.20	.041	12 53 42.3	.58	9 56.6	27	2 16 20.91	.143	12 24 58.6	.08	7 51.4
28	2 23 22.50	1.018	12 51 53.9	.46	9 52.3	28	2 16 17.87	.110	12 25 2.5	.25	7 47.4
29	2 22 58.37	0.994	12 50 8.4	.34	9 47.9	29	2 16 15.63	.076	12 25 10.5	.42	7 43.5
30	2 22 34.82	.970	12 48 25.9	.21	9 43.6	30	2 16 14.20	.043	12 25 22.6	.60	7 39.5
31	2 22 11.87	0.945	12 46 46.5	4.08	9 39.3	31	2 16 13.58	0.009	12 25 38.9	0.77	7 35.6
32	2 21 49.53	0.919	+12 45 10.2	3.95	9 35.0	32	2 16 13.76	0.024	+12 25 59.3	0.94	7 31.6

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	23.3	23.2	23.0	22.6	Polar Semidiameter	22.6	22.0	21.4	20.8
Horizontal Parallax	2.2	2.1	2.1	2.1	Horizontal Parallax	2.1	2.1	2.1	2.1

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	6 46 30.15	−0.891	+22 27 47.1	+1.27	12 0.0	1	6 36 28.53	−0.651	+22 41 40.1	+0.92	9 48.2
2	6 46 8.78	.890	22 28 17.5	.26	11 55.8	2	6 36 13.07	.637	22 42 2.0	.91	9 44.0
3	6 45 47.42	.889	22 28 47.7	.25	11 51.5	3	6 35 57.96	.622	22 42 23.6	.89	9 39.9
4	6 45 26.09	.888	22 29 17.7	.25	11 47.2	4	6 35 43.21	.607	22 42 44.8	.88	9 35.7
5	6 45 4.80	.886	22 29 47.6	.24	11 42.9	5	6 35 28.84	.591	22 43 5.6	.86	9 31.5
6	6 44 43.56	0.884	22 30 17.3	1.23	11 38.7	6	6 35 14.84	0.575	22 43 26.0	0.84	9 27.3
7	6 44 22.39	.880	22 30 46.8	.22	11 34.4	7	6 35 1.23	.559	22 43 46.1	.83	9 23.2
8	6 44 1.31	.876	22 31 16.1	.22	11 30.1	8	6 34 48.00	.543	22 44 5.8	.81	9 19.0
9	6 43 40.32	.872	22 31 45.2	.21	11 25.8	9	6 34 35.17	.526	22 44 25.2	.80	9 14.9
10	6 43 19.43	.868	22 32 14.2	.20	11 21.5	10	6 34 22.74	.509	22 44 44.1	.78	9 10.7
11	6 42 58.65	0.863	22 32 43.0	1.19	11 17.3	11	6 34 10.72	0.492	22 45 2.6	0.76	9 6.6
12	6 42 38.00	.858	22 33 11.5	.18	11 13.0	12	6 33 59.11	.475	22 45 20.7	.75	9 2.5
13	6 42 17.48	.852	22 33 39.8	.17	11 8.7	13	6 33 47.92	.457	22 45 38.4	.73	8 58.4
14	6 41 57.11	.845	22 34 7.8	.16	11 4.4	14	6 33 37.16	.440	22 45 55.8	.72	8 54.3
15	6 41 36.90	.838	22 34 35.6	.15	11 0.1	15	6 33 26.82	.422	22 46 12.8	.70	8 50.1
16	6 41 16.86	0.831	22 35 3.0	1.14	10 55.9	16	6 33 16.92	0.403	22 46 29.4	0.68	8 46.0
17	6 40 57.00	.823	22 35 30.1	.13	10 51.6	17	6 33 7.46	.383	22 46 45.6	.67	8 41.9
18	6 40 37.34	.815	22 35 57.0	.11	10 47.3	18	6 32 58.45	.366	22 47 1.5	.66	8 37.8
19	6 40 17.88	.806	22 36 23.6	.10	10 43.1	19	6 32 49.89	.347	22 47 17.1	.64	8 33.8
20	6 39 58.63	.797	22 36 50.0	.09	10 38.8	20	6 32 41.78	.328	22 47 32.4	.63	8 29.7
21	6 39 39.61	0.787	22 37 16.0	1.08	10 34.5	21	6 32 34.13	0.309	22 47 47.2	0.61	8 25.7
22	6 39 20.83	.777	22 37 41.7	.06	10 30.3	22	6 32 26.95	.289	22 48 1.6	.59	8 21.7
23	6 39 2.30	.767	22 38 7.1	.05	10 26.0	23	6 32 20.24	.270	22 48 15.7	.58	8 17.6
24	6 38 44.03	.756	22 38 32.2	.04	10 21.8	24	6 32 14.00	.250	22 48 29.4	.56	8 13.6
25	6 38 26.03	.744	22 38 57.0	.03	10 17.6	25	6 32 8.23	.230	22 48 42.7	.55	8 9.6
26	6 38 8.31	0.732	22 39 21.4	1.01	10 13.4	26	6 32 2.94	0.210	22 48 55.6	0.53	8 5.6
27	6 37 50.89	.720	22 39 45.4	0.99	10 9.2	27	6 31 58.13	.190	22 49 8.1	.51	8 1.6
28	6 37 33.77	.707	22 40 9.1	.98	10 5.0	28	6 31 53.80	.171	22 49 20.2	.50	7 57.6
29	6 37 16.97	.693	22 40 32.4	.96	10 0.8	29	6 31 49.94	.151	22 49 32.0	.48	7 53.6
30	6 37 0.49	.680	22 40 55.3	.95	9 56.6	30	6 31 46.56	.131	22 49 43.4	.46	7 49.6
31	6 36 44.34	0.666	22 41 17.9	0.93	9 52.4	31	6 31 43.67	0.110	22 49 54.3	0.45	7 45.6
32	6 36 28.53	−0.651	+22 41 40.1	+0.92	9 48.2	32	6 31 41.27	−0.090	+22 50 4.8	+0.43	7 41.6

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	9.7	9.7	9.7	9.6	Polar Semidiameter	9.6	9.5	9.3	9.1
Horizontal Parallax	1.1	1.1	1.1	1.1	Horizontal Parallax	1.1	1.1	1.1	1.1

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	6 31 49.94	−0.151	+22 49 32.0	+0.48	7 53.6
2	6 31 46.56	.131	22 49 43.4	.46	7 49.6
3	6 31 43.67	.110	22 49 54.3	.45	7 45.6
4	6 31 41.27	.090	22 50 4.8	.43	7 41.6
5	6 31 39.36	.069	22 50 15.0	.42	7 37.7
6	6 31 37.94	0.049	22 50 24.8	0.40	7 33.7
7	6 31 37.01	.029	22 50 34.2	.38	7 29.7
8	6 31 36.56	−0.009	22 50 43.2	.37	7 25.8
9	6 31 36.59	+0.011	22 50 51.8	.35	7 21.9
10	6 31 37.11	.032	22 51 0.1	.34	7 18.0
11	6 31 38.11	0.052	22 51 8.0	0.32	7 14.1
12	6 31 39.60	.072	22 51 15.5	.30	7 10.2
13	6 31 41.57	.092	22 51 22.6	.29	7 6.3
14	6 31 44.02	.112	22 51 29.3	.27	7 2.4
15	6 31 46.96	.132	22 51 35.7	.26	6 58.5
16	6 31 50.38	0.152	22 51 41.7	0.24	6 54.7
17	6 31 54.27	.172	22 51 47.2	.22	6 50.8
18	6 31 58.65	.192	22 51 52.3	.21	6 46.9
19	6 32 3.51	.212	22 51 57.1	.19	6 43.1
20	6 32 8.85	.232	22 52 1.5	.18	6 39.2
21	6 32 14.67	0.252	22 52 5.6	0.16	6 35.4
22	6 32 20.96	.272	22 52 9.2	.14	6 31.6
23	6 32 27.72	.291	22 52 12.3	.12	6 27.8
24	6 32 34.96	.311	22 52 15.0	.10	6 24.0
25	6 32 42.67	.331	22 52 17.3	.09	6 20.2
26	6 32 50.85	0.350	22 52 19.3	0.07	6 16.4
27	6 32 59.49	.370	22 52 20.8	.05	6 12.6
28	6 33 8.60	.389	22 52 21.9	.04	6 8.8
29	6 33 18.17	.408	22 52 22.5	+0.02	6 5.0
30	6 33 28.19	.427	22 52 22.7	.00	6 1.2
31	6 33 38.66	0.446	22 52 22.5	−0.02	5 57.5
32	6 33 49.58	+0.464	+22 52 21.8	−0.04	5 53.7

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	9.2	9.0	8.8	8.7
Horizontal Parallax	1.1	1.0	1.0	1.0

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	6 33 49.58	+0.464	+22 52 21.8	−0.04	5 53.7
2	6 34 0.94	.483	22 52 20.6	.06	5 50.0
3	6 34 12.75	.501	22 52 19.0	.08	5 46.3
4	6 34 24.99	.519	22 52 17.0	.09	5 42.5
5	6 34 37.67	.537	22 52 14.5	.11	5 38.8
6	6 34 50.78	0.555	22 52 11.5	0.13	5 35.1
7	6 35 4.31	.573	22 52 8.1	.15	5 31.4
8	6 35 18.27	.590	22 52 4.2	.17	5 27.7
9	6 35 32.64	.607	22 51 59.9	.19	5 24.0
10	6 35 47.43	.625	22 51 55.1	.21	5 20.3
11	6 36 2.62	0.642	22 51 49.8	0.23	5 16.6
12	6 36 18.22	.658	22 51 44.0	.25	5 13.0
13	6 36 34.22	.675	22 51 37.7	.27	5 9.3
14	6 36 50.62	.692	22 51 30.9	.29	5 5.6
15	6 37 7.42	.708	22 51 23.7	.31	5 2.0
16	6 37 24.62	0.724	22 51 15.9	0.34	4 58.4
17	6 37 42.20	.740	22 51 7.6	.36	4 54.7
18	6 38 0.16	.756	22 50 58.8	.38	4 51.1
19	6 38 18.51	.772	22 50 49.6	.40	4 47.5
20	6 38 37.23	.788	22 50 39.9	.42	4 43.9
21	6 38 56.32	0.803	22 50 29.6	0.44	4 40.3
22	6 39 15.78	.819	22 50 18.8	.46	4 36.7
23	6 39 35.61	.834	22 50 7.4	.49	4 33.1
24	6 39 55.79	.848	22 49 55.5	.51	4 29.5
25	6 40 16.33	.863	22 49 43.1	.53	4 25.9
26	6 40 37.22	0.877	22 49 30.2	0.55	4 22.3
27	6 40 58.45	.892	22 49 16.7	.57	4 18.7
28	6 41 20.02	.906	22 49 2.6	.60	4 15.1
29	6 41 41.92	.919	22 48 48.0	.62	4 11.5
30	6 42 4.15	.933	22 48 32.9	.64	4 8.0
31	6 42 26.71	0.947	22 48 17.1	0.67	4 4.4
32	6 42 49.59	+0.960	+22 48 0.7	−0.69	4 0.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.7	8.5	8.4	8.3
Horizontal Parallax	1.0	1.0	1.0	1.0

SATURN, 1857.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	6 42 26.71	+0.947	+22 48 17.1	−0.67	4 4.4
2	6 42 49.59	.960	22 48 0.7	.69	4 0.9
3	6 43 12.78	.973	22 47 43.8	.72	3 57.3
4	6 43 36.28	.985	22 47 26.3	.74	3 53.8
5	6 44 0.07	0.997	22 47 8.3	.76	3 50.3
6	6 44 24.16	1.010	22 46 49.6	0.79	3 46.7
7	6 44 48.55	.022	22 46 30.3	.81	3 43.2
8	6 45 13.23	.034	22 46 10.5	.84	3 39.7
9	6 45 38.19	.046	22 45 50.1	.86	3 36.1
10	6 46 3.43	.057	22 45 29.2	.89	3 32.6
11	6 46 28.94	1.069	22 45 7.6	0.91	3 29.1
12	6 46 54.72	.080	22 44 45.4	.94	3 25.6
13	6 47 20.77	.091	22 44 22.6	.96	3 22.1
14	6 47 47.09	.102	22 43 59.3	0.98	3 18.6
15	6 48 13.67	.113	22 43 35.5	1.01	3 15.1
16	6 48 40.50	1.123	22 43 11.0	1.03	3 11.6
17	6 49 7.58	.133	22 42 45.9	.06	3 8.1
18	6 49 34.90	.143	22 42 20.1	.09	3 4.6
19	6 50 2.46	.153	22 41 53.7	.11	3 1.1
20	6 50 30.26	.163	22 41 26.8	.13	2 57.7
21	6 50 58.29	1.173	22 40 59.3	1.16	2 54.2
22	6 51 26.55	.182	22 40 31.1	.19	2 50.8
23	6 51 55.02	.191	22 40 2.2	.22	2 47.3
24	6 52 23.71	.200	22 39 32.7	.24	2 43.8
25	6 52 52.61	.208	22 39 2.6	.27	2 40.4
26	6 53 21.70	1.216	22 38 31.8	1.30	2 36.9
27	6 53 50.99	.225	22 38 0.4	.32	2 33.5
28	6 54 20.48	.233	22 37 28.3	.35	2 30.1
29	6 54 50.17	.241	22 36 55.6	.38	2 26.6
30	6 55 20.05	.249	22 36 22.4	.40	2 23.2
31	6 55 50.10	1.256	22 35 48.6	1.42	2 19.8
32	6 56 20.32	+1.263	+22 35 14.1	−1.45	2 16.3

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	6 56 20.32	+1.263	+22 35 14.1	−1.45	2 16.3
2	6 56 50.71	.270	22 34 38.9	.48	2 12.9
3	6 57 21.26	.276	22 34 3.1	.50	2 9.5
4	6 57 51.97	.283	22 33 26.8	.52	2 6.1
5	6 58 22.83	.289	22 32 49.9	.55	2 2.6
6	6 58 53.85	1.295	22 32 12.3	1.58	1 59.2
7	6 59 25.01	.301	22 31 34.1	.60	1 55.8
8	6 59 56.31	.307	22 30 55.3	.63	1 52.4
9	7 0 27.75	.313	22 30 16.0	.65	1 49.0
10	7 0 59.33	.319	22 29 36.1	.68	1 45.6
11	7 1 31.03	1.324	22 28 55.5	1.71	1 42.2
12	7 2 2.85	.329	22 28 14.2	.73	1 38.8
13	7 2 34.80	.334	22 27 32.8	.76	1 35.4
14	7 3 6.86	.338	22 26 49.9	.78	1 32.0
15	7 3 39.03	.343	22 26 7.0	.80	1 28.6
16	7 4 11.31	1.347	22 25 23.4	1.83	1 25.2
17	7 4 43.69	.351	22 24 39.2	.85	1 21.8
18	7 5 16.17	.355	22 23 54.4	.88	1 18.4
19	7 5 48.75	.359	22 23 8.9	.91	1 15.0
20	7 6 21.41	.363	22 22 22.9	.93	1 11.6
21	7 6 54.15	1.366	22 21 36.3	1.95	1 8.2
22	7 7 26.97	.369	22 20 49.1	1.98	1 4.8
23	7 7 59.87	.372	22 20 1.4	2.00	1 1.4
24	7 8 32.84	.375	22 19 13.2	.02	0 58.1
25	7 9 5.87	.377	22 18 24.4	.05	0 54.7
26	7 9 38.95	1.380	22 17 35.0	2.07	0 51.3
27	7 10 12.09	.382	22 16 45.1	.09	0 47.9
28	7 10 45.28	.384	22 15 54.7	.11	0 44.5
29	7 11 18.51	.385	22 15 3.7	.14	0 41.2
30	7 11 51.78	.387	22 14 12.2	.16	0 37.8
31	7 12 25.08	1.388	22 13 20.2	2.18	0 34.4
32	7 12 58.41	+1.389	+22 12 27.7	−2.20	0 31.0

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	8.3	8.2	8.0	7.9
Horizontal Parallax	1.0	0.9	0.9	0.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.9	7.9	7.8	7.8
Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.
1	7 12 25.08	+1.388	+22 13 20.2	−2.18	0 34.4
2	7 12 58.41	.389	22 12 27.7	.20	0 31.0
3	7 13 31.77	.390	22 11 34.7	.22	0 27.6
4	7 14 5.15	.391	22 10 41.1	.24	0 24.3
5	7 14 38.54	.391	22 9 47.1	.26	0 20.9
6	7 15 11.94	1.392	22 8 52.6	2.28	0 17.5
7	7 15 45.35	.392	22 7 57.6	.30	0 14.1
8	7 16 18.77	.393	22 7 2.2	.32	0 10.7
9	7 16 52.20	.393	22 6 6.4	.34	0 7.4
10	7 17 25.62	.392	22 5 10.1	.35	0 4.0
11	7 17 59.08	1.392	22 4 13.4	2.37	0 0.6 23 57.2
12	7 18 32.43	.391	22 3 16.2	.39	23 53.8
13	7 19 5.82	.390	22 2 18.6	.41	23 50.5
14	7 19 39.18	.389	22 1 20.5	.43	23 47.1
15	7 20 12.52	.388	22 0 22.0	.45	23 43.7
16	7 20 45.83	1.387	21 59 23.1	2.46	23 40.3
17	7 21 19.10	.385	21 58 23.8	.48	23 36.9
18	7 21 52.34	.384	21 57 24.2	.49	23 33.6
19	7 22 25.53	.382	21 56 24.3	.50	23 30.2
20	7 22 58.68	.380	21 55 24.0	.52	23 26.8
21	7 23 31.77	1.377	21 54 23.3	2.54	23 23.4
22	7 24 4.80	.375	21 53 22.3	.55	23 20.0
23	7 24 37.77	.372	21 52 21.0	.56	23 16.7
24	7 25 10.67	.369	21 51 19.4	.57	23 13.3
25	7 25 43.50	.366	21 50 17.5	.59	23 9.9
26	7 26 16.25	1.363	21 49 15.3	2.60	23 6.5
27	7 26 48.92	.359	21 48 12.9	.61	23 3.1
28	7 27 21.50	.356	21 47 10.2	.62	22 59.7
29	7 27 53.99	.352	21 46 7.2	.63	22 56.3
30	7 28 26.38	1.348	21 45 4.1	.63	22 52.9
31	7 28 58.67	1.343	21 44 0.8	2.64	22 49.5
32	7 29 30.86	+1.339	+21 42 57.3	−2.65	22 46.1

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage
	h. m. s.	s.	° ′ ″	″	h. m.
1	7 29 30.86	+1.339	+21 42 57.3	−2.65	22 46.1
2	7 30 2.94	.334	21 41 53.6	.66	22 42.7
3	7 30 34.91	.330	21 40 49.7	.66	22 39.3
4	7 31 6.76	.325	21 39 45.7	.67	22 35.9
5	7 31 38.49	.320	21 38 41.6	.67	22 32.5
6	7 32 10.10	1.314	21 37 37.3	2.68	22 29.1
7	7 32 41.58	.309	21 36 32.9	.69	22 25.7
8	7 33 12.93	.303	21 35 28.4	.69	22 22.3
9	7 33 44.14	.297	21 34 23.8	.69	22 18.9
10	7 34 15.21	.291	21 33 19.2	.69	22 15.5
11	7 34 46.13	1.285	21 32 14.5	2.70	22 12.1
12	7 35 16.91	.279	21 31 9.7	.70	22 8.7
13	7 35 47.53	.272	21 30 4.9	.70	22 5.2
14	7 36 17.99	.266	21 29 0.1	.70	22 1.8
15	7 36 48.28	.259	21 27 55.4	.70	21 58.4
16	7 37 18.41	1.252	21 26 50.7	2.70	21 54.9
17	7 37 48.36	.244	21 25 46.0	.70	21 51.5
18	7 38 18.14	.237	21 24 41.3	.69	21 48.0
19	7 38 47.73	.229	21 23 36.8	.69	21 44.6
20	7 39 17.13	.221	21 22 32.4	.68	21 41.1
21	7 39 46.34	1.213	21 21 28.1	2.68	21 37.7
22	7 40 15.35	.205	21 20 23.9	.67	21 34.2
23	7 40 44.16	.196	21 19 19.8	.66	21 30.7
24	7 41 12.76	.187	21 18 16.0	.65	21 27.3
25	7 41 41.14	.178	21 17 12.4	.65	21 23.8
26	7 42 9.31	1.169	21 16 9.0	2.64	21 20.4
27	7 42 37.26	.160	21 15 5.8	.63	21 16.9
28	7 43 4.98	.150	21 14 2.8	.62	21 13.4
29	7 43 32.46	.140	21 13 0.1	.60	21 10.0
30	7 43 59.71	.130	21 11 57.8	.59	21 6.5
31	7 44 26.72	1.120	21 10 55.8	2.58	21 3.0
32	7 44 53.49	+1.110	+21 9 54.1	−2.56	20 59.5

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.8	7.8	7.8	7.8
Horizontal Parallax	0.9	0.9	0.9	0.9

Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″
Polar Semidiameter	7.8	7.9	7.9	8.0
Horizontal Parallax	0.9	0.9	0.9	0.9

SATURN, 1857.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 hour.	Apparent Declination.	Var. of Dec. for 1 hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Neon.*	*Noon.*	
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	7 44 53.49	+1.110	+21 9 54.1	−2.56	20 59.5	1	7 56 1.95	+0.719	+20 43 11.5	−1.76	19 12.5
2	7 45 20.02	.100	21 8 52.7	.55	20 56.0	2	7 56 19.01	.703	20 42 29.8	.72	19 8.8
3	7 45 46.29	.089	21 7 51.7	.53	20 52.5	3	7 56 35.70	.687	20 41 49.0	.68	19 5.2
4	7 46 12.31	.079	21 6 51.1	.52	20 49.0	4	7 56 52.01	.671	20 41 9.2	.64	19 1.5
5	7 46 38.07	.068	21 5 50.9	.50	20 45.5	5	7 57 7.92	.655	20 40 30.4	.60	18 57.9
6	7 47 3.57	1.057	21 4 51.1	2.48	20 42.0	6	7 57 23.43	0.638	20 39 52.6	1.55	18 54.2
7	7 47 28.81	.046	21 3 51.7	.47	20 38.5	7	7 57 38.54	.621	20 39 15.9	.51	18 50.5
8	7 47 53.77	.034	21 2 52.7	.45	20 35.0	8	7 57 53.26	.605	20 38 40.2	.47	18 46.8
9	7 48 18.45	.022	21 1 54.2	.43	20 31.5	9	7 58 7.58	.588	20 38 5.5	.42	18 43.1
10	7 48 42.85	1.011	21 0 56.2	.41	20 27.9	10	7 58 21.49	.571	20 37 31.9	.38	18 39.4
11	7 49 6.97	0.999	20 59 58.8	2.38	20 24.4	11	7 58 34.99	0.554	20 36 59.4	1.33	18 35.7
12	7 49 30.80	.987	20 59 1.9	.36	20 20.8	12	7 58 48.07	.536	20 36 28.0	.28	18 31.9
13	7 49 54.33	.974	20 58 5.6	.33	20 17.3	13	7 59 0.73	.519	20 35 57.8	.24	18 28.2
14	7 50 17.56	.961	20 57 9.9	.31	20 13.7	14	7 59 12.97	.501	20 35 28.7	.19	18 24.5
15	7 50 40.48	.949	20 56 14.8	.29	20 10.2	15	7 59 24.78	.483	20 35 0.8	.14	18 20.7
16	7 51 3.09	0.936	20 55 20.2	2.26	20 6.6	16	7 59 36.16	0.465	20 34 34.1	1.09	18 17.0
17	7 51 25.39	.923	20 54 26.3	.23	20 3.0	17	7 59 47.11	.447	20 34 8.6	1.04	18 13.2
18	7 51 47.37	.909	20 53 33.1	.20	19 59.5	18	7 59 57.63	.429	20 33 44.3	0.99	18 9.4
19	7 52 9.02	.895	20 52 40.6	.17	19 55.9	19	8 0 7.71	.411	20 33 21.3	.93	18 5.7
20	7 52 30.34	.881	20 51 48.8	.14	19 52.3	20	8 0 17.34	.392	20 32 59.5	.88	18 1.9
21	7 52 51.33	0.867	20 50 57.7	2.11	19 48.7	21	8 0 26.53	0.374	20 32 39.0	0.83	17 58.1
22	7 53 11.98	.853	20 50 7.4	.08	19 45.1	22	8 0 35.28	.355	20 32 19.7	.78	17 54.3
23	7 53 32.29	.839	20 49 17.9	.05	19 41.5	23	8 0 43.57	.336	20 32 1.7	.72	17 50.5
24	7 53 52.25	.825	20 48 29.2	2.01	19 37.9	24	8 0 51.41	.316	20 31 45.0	.67	17 46.7
25	7 54 11.87	.810	20 47 41.3	1.96	19 34.3	25	8 0 58.79	.298	20 31 29.6	.62	17 42.9
26	7 54 31.13	0.795	20 46 54.2	1.95	19 30.7	26	8 1 5.72	0.279	20 31 15.5	0.56	17 39.1
27	7 54 50.03	.780	20 46 7.8	.91	19 27.0	27	8 1 12.19	.260	20 31 2.8	.50	17 35.2
28	7 55 8.56	.764	20 45 22.3	.88	19 23.4	28	8 1 18.21	.241	20 30 51.4	.45	17 31.4
29	7 55 26.72	.749	20 44 37.7	.84	19 19.8	29	8 1 23.77	.222	20 30 41.3	.39	17 27.6
30	7 55 44.52	.734	20 43 54.1	.80	19 16.1	30	8 1 28.86	.202	20 30 32.5	.34	17 23.7
31	7 56 1.95	0.719	20 43 11.5	1.76	19 12.5	31	8 1 33.49	0.183	20 30 25.1	0.28	17 19.9
32	7 56 19.01	+0.703	+20 42 29.8	−1.72	19 8.8	32	8 1 37.66	+0.164	+20 30 19.1	−0.22	17 16.0

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	8.0	8.1	8.2	8.4	Polar Semidiameter	8.4	8.5	8.6	8.8
Horizontal Parallax	0.9	0.9	0.9	1.0	Horizontal Parallax	1.0	1.0	1.0	1.0

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R.A. for 1 hour. Noon.	Apparent Declination. Noon.	Var. of Dec. for 1 hour. Noon.	Meridian Passage.
	h. m. s.	s.	° ′ ″	″	h. m.		h. m. s.	s.	° ′ ″	″	h. m.
1	8 1 37.66	+0.164	+20 30 19.1	−0.22	17 16.0	1	8 0 5.34	−0.411	+20 37 54.3	+1.45	15 16.3
2	8 1 41.36	.144	20 30 14.4	.17	17 12.1	2	7 59 55.26	.429	20 38 29.7	.50	15 12.2
3	8 1 44.60	.125	20 30 11.1	.11	17 8.2	3	7 59 44.76	.446	20 39 6.2	.55	15 8.1
4	8 1 47.37	.106	20 30 9.2	.05	17 4.3	4	7 59 33.85	.463	20 39 43.9	.59	15 4.0
5	8 1 49.67	.086	20 30 8.6	− .00	17 0.4	5	7 59 22.53	.480	20 40 22.7	.64	14 59.9
6	8 1 51.50	0.067	20 30 9.4	+0.06	16 56.5	6	7 59 10.81	0.496	20 41 2.5	1.68	14 55.7
7	8 1 52.87	.047	20 30 11.6	.12	16 52.6	7	7 58 58.70	.513	20 41 43.5	.73	14 51.6
8	8 1 53.76	.027	20 30 15.2	.18	16 48.7	8	7 58 46.19	.529	20 42 25.6	.78	14 47.4
9	8 1 54.17	+ .007	20 30 20.2	.23	16 44.7	9	7 58 33.29	.545	20 43 8.7	.82	14 43.3
10	8 1 54.11	− .012	20 30 26.5	.29	16 40.8	10	7 58 20.01	.561	20 43 52.8	.86	14 39.1
11	8 1 53.58	0.032	20 30 34.2	0.35	16 36.8	11	7 58 6.35	0.577	20 44 37.9	1.90	14 34.9
12	8 1 52.57	.052	20 30 43.3	.41	16 32.9	12	7 57 52.38	.592	20 45 24.0	.94	14 30.8
13	8 1 51.09	.072	20 30 53.8	.47	16 28.9	13	7 57 37.95	.606	20 46 11.0	1.98	14 26.6
14	8 1 49.18	.091	20 31 5.7	.53	16 25.0	14	7 57 23.22	.621	20 46 58.9	2.01	14 22.4
15	8 1 46.70	.111	20 31 19.1	.59	16 21.0	15	7 57 8.14	.635	20 47 47.7	.05	14 18.2
16	8 1 43.81	0.130	20 31 33.9	0.64	16 17.0	16	7 56 52.78	0.649	20 48 37.3	2.09	14 14.0
17	8 1 40.44	.150	20 31 50.0	.70	16 13.0	17	7 56 37.00	.662	20 49 27.8	.12	14 9.8
18	8 1 36.60	.170	20 32 7.5	.76	16 9.0	18	7 56 20.95	.675	20 50 19.0	.15	14 5.6
19	8 1 32.29	.189	20 32 26.4	.81	16 5.0	19	7 56 4.58	.688	20 51 11.0	.18	14 1.4
20	8 1 27.52	.208	20 32 46.6	.87	16 1.0	20	7 55 47.91	.700	20 52 3.8	.21	13 57.2
21	8 1 22.30	0.227	20 33 8.1	0.92	15 56.9	21	7 55 30.95	0.712	20 52 57.3	2.24	13 53.0
22	8 1 16.62	.246	20 33 30.9	0.98	15 52.9	22	7 55 13.72	.724	20 53 51.4	.27	13 48.8
23	8 1 10.48	.265	20 33 55.1	1.04	15 48.9	23	7 54 56.21	.735	20 54 46.1	.29	13 44.6
24	8 1 3.88	.284	20 34 20.6	.09	15 44.8	24	7 54 38.44	.746	20 55 41.4	.32	13 40.4
25	8 0 56.83	.303	20 34 47.4	.14	15 40.8	25	7 54 20.42	.756	20 56 37.3	.34	13 36.2
26	8 0 49.34	0.321	20 35 15.4	1.19	15 36.7	26	7 54 2.15	0.766	20 57 33.7	2.36	13 31.9
27	8 0 41.41	.340	20 35 44.7	.25	15 32.7	27	7 53 43.64	.775	20 58 30.7	.38	13 27.7
28	8 0 33.04	.358	20 36 15.2	.30	15 28.6	28	7 53 24.92	.784	20 59 28.1	.40	13 23.5
29	8 0 24.24	.376	20 36 46.9	.35	15 24.5	29	7 53 6.00	.792	21 0 25.9	.41	13 19.2
30	8 0 15.00	.394	20 37 20.0	.40	15 20.4	30	7 52 46.89	.800	21 1 24.0	.43	13 15.0
31	8 0 5.34	0.411	20 37 54.3	1.45	15 16.3	31	7 52 27.60	0.808	21 2 22.4	2.44	13 10.7
32	7 59 55.26	−0.429	+20 38 29.7	+1.50	15 12.2	32	7 52 8.23	−0.816	+21 3 21.1	+2.46	13 6.5

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
	″	″	″	″		″	″	″	″
Polar Semidiameter	8.9	9.0	9.2	9.3	Polar Semidiameter	9.3	9.5	9.6	9.7
Horizontal Parallax	1.0	1.0	1.1	1.1	Horizontal Parallax	1.1	1.1	1.1	1.1

Greenwich Mean Noon.	d.	X.	Y.	Z.	Greenwich Mean Noon.	d.	X.	Y.	Z.
Jan. 0	0	+.1722373	—.8880277	—.3853897	Mar. 1	60	+.9369432	—.2975802	—.1291450
1	1	.1894350	.8850712	.3841061	2	61	.9427083	.2825698	.1226301
2	2	.2065724	.8818381	.3827028	3	62	.9481865	.2674745	.1160786
3	3	.2236439	.8783312	.3811803	4	63	.9533768	.2522996	.1094927
4	4	.2406436	.8745513	.3795395	5	64	.9582784	.2370498	.1028744
5	5	+.2575670	—.8705001	—.3777807	6	65	+.9628901	—.2217298	—.0962257
6	6	.2744090	.8661783	.3759047	7	66	.9672112	.2063439	.0895486
7	7	.2911648	.8615878	.3739123	8	67	.9712405	.1908968	.0828452
8	8	.3078295	.8567307	.3718042	9	68	.9749782	.1753931	.0761174
9	9	.3243981	.8516086	.3695810	10	69	.9784231	.1598371	.0693669
10	10	+.3408659	—.8462227	—.3672436	11	70	+.9815748	—.1442334	—.0625957
11	11	.3572282	.8405748	.3647927	12	71	.9844324	.1285862	.0558056
12	12	.3734801	.8346667	.3622291	13	72	.9869951	.1129000	.0489987
13	13	.3896168	.8285002	.3595535	14	73	.9892627	.0971791	.0421768
14	14	.4056338	.8220767	.3567665	15	74	.9912343	.0814287	.0353417
15	15	+.4215263	—.8153983	—.3538688	16	75	+.9929094	—.0656521	—.0284953
16	16	.4372896	.8084666	.3508612	17	76	.9942871	.0498543	.0216395
17	17	.4529182	.8012833	.3477445	18	76	.9953672	.0340404	.0147765
18	18	.4684075	.7938506	.3445195	19	78	.9961492	.0182148	.0079085
19	19	.4837529	.7861705	.3411872	20	79	.9966329	—.0023829	—.0010376
20	20	+.4989494	—.7782450	—.3377483	21	80	+.9968179	+.0134508	+.0058343
21	21	.5139917	.7700771	.3342040	22	81	.9967042	.0292821	.0127052
22	22	.5288750	.7616690	.3305552	23	82	.9962916	.0451057	.0195730
23	23	.5435947	.7530227	.3268033	24	83	.9955805	.0609165	.0264354
24	24	.5581458	.7441416	.3229490	25	84	.9945716	.0767094	.0332900
25	25	+.5725226	—.7350288	—.3189941	26	85	+.9932652	+.0924790	+.0401345
26	26	.5867210	.7256871	.3149396	27	86	.9916616	.1082204	.0469667
27	27	.6007362	.7161196	.3107871	28	87	.9897617	.1239295	.0537848
28	28	.6145642	.7063295	.3065379	29	88	.9875668	.1396010	.0605867
29	29	.6282008	.6963207	.3021936	30	89	.9850780	.1552299	.0673698
30	30	+.6416415	—.6860963	—.2977556	31	90	+.9822965	+.1708106	+.0741319
31	31	.6548821	.6756597	.2932258	Apr. 1	91	.9792235	.1863392	.0808713
Feb. 1	32	.6679186	.6650151	.2886057	2	92	.9758610	.2018113	.0875860
2	33	.6807473	.6541662	.2838969	3	93	.9722116	.2172231	.0942743
3	34	.6933649	.6431157	.2791009	4	94	.9682759	.2325695	.1009341
4	35	+.7057677	—.6318683	—.2742194	5	95	+.9640554	+.2478463	+.1075635
5	36	.7179524	.6204272	.2692540	6	96	.9595520	.2630492	.1141608
6	37	.7299156	.6087966	.2642065	7	97	.9547670	.2781742	.1207242
7	38	.7416539	.5969799	.2590784	8	98	.9497019	.2932169	.1272519
8	39	.7531645	.5849797	.2538712	9	99	.9443605	.3081738	.1337422
9	40	+.7644446	—.5728014	—.2485863	10	100	+.9387430	+.3230402	+.1401934
10	41	.7754907	.5604471	.2432252	11	101	.9328511	.3378130	.1466038
11	42	.7863000	.5479211	.2377896	12	102	.9266865	.3524873	.1529718
12	43	.7968689	.5352273	.2322812	13	103	.9202511	.3670597	.1592957
13	44	.8071949	.5223688	.2267016	14	104	.9135466	.3815265	.1655739
14	45	+.8172742	—.5093496	—.2210523	15	105	+.9065752	+.3958832	+.1718044
15	46	.8271046	.4961733	.2153347	16	106	.8993383	.4101252	.1779854
16	47	.8366824	.4828439	.2095506	17	107	.8918377	.4242491	.1841152
17	48	.8460046	.4693657	.2037016	18	108	.8840759	.4382502	.1901919
18	49	.8550686	.4557422	.1977895	19	109	.8760556	.4521236	.1962135
19	50	+.8638712	—.4419776	—.1918161	20	110	+.8677784	+.4658662	+.2021782
20	51	.8724093	.4280762	.1857833	21	111	.8592466	.4794742	.2080843
21	52	.8806803	.4140435	.1796930	22	112	.8504631	.4929424	.2139300
22	53	.8886816	.3998830	.1735472	23	113	.8414308	.5062670	.2197134
23	54	.8964105	.3855995	.1673479	24	114	.8321528	.5194441	.2254327
24	55	+.9038648	—.3711978	—.1610972	25	115	+.8226325	+.5324694	+.2310862
25	56	.9110422	.3566821	.1547971	26	116	.8128723	.5453393	.2366719
26	57	.9179405	.3420577	.1484496	27	117	.8028757	.5580499	.2421881
27	58	.9245579	.3273292	.1420569	28	118	.7926466	.5705974	.2476334
28	59	.9308927	.3125019	.1356213	29	119	.7821886	.5829776	.2530064
		+.9369432	—.2975802	—.1291450	30	120	+.7715043	+.5951883	+.2583056

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d.					d.			
May 1	121	+.7605974	+.6072265	+.2635295	July 1	182	—.1682517	+.9198496	+.3991960
2	122	.7494717	.6190880	.2686767	2	183	.1849077	.9171523	.3980249
3	123	.7381317	.6307700	.2737458	3	184	.2015105	.9141977	.3967423
4	124	.7265807	.6422697	.2787357	4	185	.2180555	.9109870	.3953487
5	125	.7148218	.6535842	.2836453	5	186	.2345385	.9075213	.3938444
6	126	+.7028592	+.6647105	+.2884732	6	187	—.2509548	+.9038013	+.3922300
7	127	.6906963	.6756455	.2932182	7	188	.2673012	.8998280	.3905060
8	128	.6783362	.6863876	.2978792	8	189	.2835728	.8956028	.3886726
9	129	.6657824	.6969330	.3024552	9	190	.2997653	.8911268	.3867306
10	130	.6530382	.7072797	.3069451	10	191	.3158747	.8864009	.3846802
11	131	+.6401067	+.7174251	+.3113477	11	192	—.3318966	+.8814257	+.3825219
12	132	.6269920	.7273663	.3156618	12	193	.3478266	.8762031	.3802561
13	133	.6136978	.7371004	.3198862	13	194	.3636605	.8707334	.3778832
14	134	.6002279	.7466249	.3240198	14	195	.3793930	.8650181	.3754035
15	135	.5865846	.7559375	.3280616	15	196	.3950200	.8590580	.3728177
16	136	+.5727723	+.7650347	+.3320103	16	197	—.4105376	+.8528550	+.3701264
17	137	.5587951	.7739143	.3358644	17	198	.4259407	.8464108	.3673302
18	138	.5446570	.7825726	.3396227	18	199	.4412243	.8397263	.3644295
19	139	.5303617	.7910077	.3432841	19	200	.4563839	.8328038	.3614254
20	140	.5159138	.7992177	.3468475	20	201	.4714139	.8256448	.3583185
21	141	+.5013170	+.8071991	+.3503119	21	202	—.4863110	+.8182520	+.3551099
22	142	.4865760	.8149497	.3536761	22	203	.5010707	.8106263	.3518003
23	143	.4716951	.8224668	.3569390	23	204	.5156878	.8027705	.3483905
24	144	.4566795	.8297491	.3600996	24	205	.5301579	.7946874	.3448818
25	145	.4415332	.8367938	.3631569	25	206	.5444766	.7863792	.3412755
26	146	+.4262607	+.8435992	+.3661101	26	207	—.5586398	+.7778486	+.3375727
27	147	.4108674	.8501636	.3689587	27	208	.5726431	.7690980	.3337745
28	148	.3953582	.8564849	.3717017	28	209	.5864835	.7601300	.3298819
29	149	.3797380	.8625618	.3743384	29	210	.6001561	.7509476	.3258964
30	150	.3640108	.8683930	.3768684	30	211	.6136574	.7415541	.3218194
31	151	+.3481822	+.8739771	+.3792910	31	212	—.6269845	+.7319516	+.3176519
June 1	152	.3322564	.8793128	.3816058	Aug. 1	213	.6401332	.7221433	.3133952
2	153	.3162380	.8843993	.3838125	2	214	.6531003	.7121322	.3090505
3	154	.3001323	.8892356	.3859106	3	215	.6658820	.7019203	.3046189
4	155	.2839426	.8938207	.3879000	4	216	.6784757	.6915104	.3001016
5	156	+.2676742	+.8981541	+.3897800	5	217	—.6908778	+.6809059	+.2954999
6	157	.2513309	.9022342	.3915502	6	218	.7030849	.6701092	.2908149
7	158	.2349168	.9060602	.3932102	7	219	.7150933	.6591233	.2860478
8	159	.2184366	.9096312	.3947598	8	220	.7269003	.6479502	.2811998
9	160	.2018953	.9129468	.3961986	9	221	.7385025	.6365935	.2762720
10	161	+.1852960	+.9160060	+.3975265	10	222	—.7498964	+.6250559	+.2712656
11	162	.1686434	.9188074	.3987427	11	223	.7610783	.6133403	.2661818
12	163	.1519419	.9213507	.3998469	12	224	.7720451	.6014489	.2610218
13	164	.1351969	.9236346	.4008387	13	225	.7827931	.5893854	.2557869
14	165	.1184124	.9256584	.4017177	14	226	.7933187	.5771526	.2504784
15	166	+.1015926	+.9274212	+.4024835	15	227	—.8036189	+.5647541	+.2450977
16	167	.0847426	.9289225	.4031357	16	228	.8136900	.5521929	.2396463
17	168	.0678669	.9301613	.4036740	17	229	.8235286	.5394724	.2341257
18	169	.0509704	.9311370	.4040981	18	230	.8331315	.5265961	.2285374
19	170	.0340586	.9318493	.4044077	19	231	.8424953	.5135687	.2228831
20	171	+.0171359	+.9322984	+.4046027	20	232	—.8516170	+.5003934	+.2171646
21	172	+.0002079	.9324827	.4046830	21	233	.8604938	.4870742	.2113837
22	173	—.0167204	.9324030	.4046485	22	234	.8691223	.4736152	.2055420
23	174	.0336440	.9320588	.4044991	23	235	.8775002	.4600207	.1996415
24	175	.0505582	.9314508	.4042350	24	236	.8856253	.4462942	.1936838
25	176	—.0674567	+.9305796	+.4038565	25	237	—.8934950	+.4324405	+.1876708
26	177	.0843352	.9294454	.4033637	26	238	.9011071	.4184634	.1816045
27	178	.1011882	.9280484	.4027567	27	239	.9084591	.4043669	.1754865
28	179	.1180111	.9263891	.4020359	28	240	.9155489	.3901554	.1693190
29	180	.1347993	.9244692	.4012020	29	241	.9223747	.3758336	.1631035
30	181	.1515478	.9222889	.4002552	30	242	.9289352	.3614050	.1568417
31	182	—.1682517	+.9198496	+.3991960	31	243	—.9352285	+.3468733	+.1505354

SUN'S COÖRDINATES, 1857.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
	d.					d.			
Sept. 1	244	—.9412529	+.3322431	+.1441866	Nov. 1	305	—.7701788	—.5731396	—.2487313
2	245	.9470069	.3175186	.1377970	2	306	.7589446	.5852565	.2539895
3	246	.9524887	.3027035	.1313681	3	307	.7474805	.5971968	.2591708
4	247	.9576966	.2878019	.1249016	4	308	.7357896	.6089570	.2642741
5	248	.9626298	.2728166	.1183990	5	309	.7238767	.6205331	.2692978
6	249	—.9672858	+.2577523	+.1118621	6	310	—.7117433	—.6319216	—.2742402
7	250	.9716633	.2426131	.1052926	7	311	.6993934	.6431188	.2790998
8	251	.9757609	.2274032	.0986922	8	312	.6868295	.6541221	.2838753
9	252	.9795766	.2121260	.0920626	9	313	.6740547	.6649269	.2885649
10	253	.9831084	.1967865	.0854057	10	314	.6610730	.6755300	.2931670
11	254	—.9863558	+.1813889	+.0787233	11	315	—.6478882	—.6859276	—.2976799
12	255	.9893170	.1659363	.0720173	12	316	.6345042	.6961160	.3021022
13	256	.9919907	.1504345	.0652896	13	317	.6209243	.7060919	.3064321
14	257	.9943742	.1348872	.0585421	14	318	.6071525	.7158516	.3106688
15	258	.9964675	.1192995	.0517768	15	319	.5931934	.7253911	.3148088
16	259	—.9982691	+.1036761	+.0449956	16	320	—.5790514	—.7347077	—.3188524
17	260	0.9997781	.0880210	.0382009	17	321	.5647305	.7437977	.3227974
18	261	1.0009933	.0723402	.0313949	18	322	.5502357	.7526581	.3266427
19	262	.0019145	.0566379	.0245796	19	323	.5355719	.7612868	.3303870
20	263	.0025411	.0409193	.0177572	20	324	.5207437	.7696789	.3340291
21	264	—.0028720	+.0251890	+.0109298	21	325	—.5057559	—.7778339	—.3375678
22	265	.0029081	+.0094522	+.0040997	22	326	.4906138	.7857484	.3410020
23	266	.0026492	—.0062865	—.0027310	23	327	.4753212	.7934203	.3443308
24	267	.0020947	.0220218	.0095602	24	328	.4598834	.8008468	.3475531
25	268	.0012454	.0377496	.0163859	25	329	.4443057	.8080260	.3506679
26	269	—.0001013	—.0534648	—.0232060	26	330	—.4285928	—.8149555	—.3536745
27	270	0.9986628	.0691626	.0300184	27	331	.4127492	.8216342	.3565721
28	271	.9969309	.0848390	.0368213	28	332	.3967795	.8280595	.3593598
29	272	.9949063	.1004892	.0436125	29	333	.3806888	.8342297	.3620371
30	273	.9925891	.1161083	.0503904	30	334	.3644820	.8401434	.3646032
Oct. 1	274	—.9899798	—.1316921	—.0571531	Dec. 1	335	—.3481634	—.8457990	—.3670575
2	275	.9870795	.1472373	.0638988	2	336	.3317374	.8511946	.3693988
3	276	.9838891	.1627385	.0706256	3	337	.3152087	.8563284	.3716266
4	277	.9804084	.1781925	.0773317	4	338	.2985831	.8611984	.3737402
5	278	.9766393	.1935938	.0840151	5	339	.2818644	.8658029	.3757388
6	279	—.9725818	—.2089384	—.0906739	6	340	—.2650579	—.8701404	—.3776217
7	280	.9682362	.2242218	.0973064	7	341	.2481681	.8742097	.3793882
8	281	.9636033	.2394407	.1039108	8	342	.2311998	.8780090	.3810376
9	282	.9586851	.2545893	.1104851	9	343	.2141588	.8815363	.3825691
10	283	.9534813	.2696630	.1170272	10	344	.1970493	.8847906	.3839821
11	284	—.9479935	—.2846583	—.1235352	11	345	—.1798772	—.8877706	—.3852759
12	285	.9422213	.2995706	.1300071	12	346	.1626476	.8904745	.3864499
13	286	.9361674	.3143938	.1364408	13	347	.1453660	.8929010	.3875034
14	287	.9298330	.3291245	.1428343	14	348	.1280384	.8950495	.3884359
15	288	.9232193	.3437576	.1491855	15	349	.1106701	.8969185	.3892472
16	289	—.9163271	—.3582876	—.1554925	16	350	—.0932670	—.8985079	—.3899369
17	290	.9091592	.3727107	.1617520	17	351	.0758348	.8998166	.3905047
18	291	.9017173	.3870218	.1679632	18	352	.0583795	.9008436	.3909503
19	292	.8940037	.4012158	.1741238	19	353	.0409065	.9015897	.3912736
20	293	.8860204	.4152886	.1802317	20	354	.0234212	.9020543	.3914745
21	294	—.8777700	—.4292357	—.1862847	21	355	—.0059304	—.9022378	—.3915532
22	295	.8692545	.4430520	.1922808	22	356	+.0115605	.9021398	3915100
23	296	.8604776	.4567340	.1982185	23	357	.0290469	.9017610	.3913448
24	297	.8514414	.4702771	.2040957	24	358	.0465225	.9011013	.3910577
25	298	.8421492	.4836767	.2099105	25	359	.0639821	.9001615	.3906492
26	299	—.8326029	—.4969296	—.2156615	26	360	+.0814199	—.8989421	—.3901194
27	300	.8228068	.5100308	.2213466	27	361	.0988311	.8974435	.3894686
28	301	.8127642	.5229773	.2269644	28	362	.1162108	.8956667	.3886973
29	302	.8024767	.5357650	.2325133	29	363	.1335533	.8936125	.3878055
30	303	.7919482	.5483901	.2379916	30	364	.1508542	.8912814	.3867939
31	304	—.7811814	—.5608497	—.2433981	31	365	+.1681082	—.8886744	—.3856628

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

Sidereal 0h.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1857.	23° 27′						
	″	″	s.	″	″	″	° ′
0	36.19	-2.67	-0.16	0.00	-20.80	8.72	10 51.4
10	36.30	2.10	0.13	1.37	20.79	8.72	10 19.7
20	36.46	1.66	0.10	2.74	20.77	8.71	9 48.0
30	36.64	1.35	0.08	4.12	20.75	8.70	9 16.3
40	36.84	1.20	0.07	5.49	20.72	8.69	8 44.6
50	37.02	1.21	0.07	6.86	20.67	8.67	8 12.9
60	37.16	1.35	0.08	8.23	20.62	8.65	7 41.3
70	37.24	1.58	0.10	9.60	20.57	8.63	7 9.6
80	37.26	1.85	0.11	10.98	20.51	8.61	6 37.9
90	37.22	2.12	0.12	12.35	20.45	8.58	6 6.2
100	37.11	2.33	0.14	13.72	20.40	8.56	5 34.5
110	36.96	2.45	0.14	15.09	20.34	8.53	5 2.8
120	36.79	2.44	0.14	16.47	20.29	8.51	4 31.1
130	36.61	2.29	0.13	17.84	20.24	8.49	3 59.5
140	36.41	2.01	0.12	19.21	20.19	8.47	3 27.8
150	36.26	1.61	0.10	20.59	20.16	8.46	2 56.1
160	36.16	1.12	0.07	21.95	20.13	8.45	2 24.4
170	36.11	0.58	-0.07	23.33	20.12	8.44	1 52.7
180	36.12	-0.04	0.00	24.70	20.11	8.44	1 21.0
190	36.19	+0.47	+0.03	26.07	20.11	8.44	0 49.3
200	36.30	0.90	0.05	27.44	20.12	8.44	0 17.7
210	36.45	1.22	0.07	28.81	20.14	8.45	359 46.0
220	36.62	1.41	0.08	30.19	20.17	8.46	359 14.3
230	36.78	1.46	0.09	31.56	20.21	8.48	358 42.6
240	36.92	1.39	0.08	32.93	20.25	8.50	358 10.9
250	37.02	1.21	0.07	34.31	20.30	8.52	357 39.2
260	37.07	0.95	0.06	35.68	20.35	8.54	357 7.5
270	37.06	0.67	0.04	37.05	20.41	8.57	356 35.9
280	36.98	0.42	0.02	38.42	20.47	8.59	356 4.2
290	36.84	0.24	0.01	39.79	20.53	8.61	355 32.5
300	36.66	0.17	0.01	41.16	20.59	8.64	355 0.8
310	36.45	0.24	0.01	42.54	20.64	8.66	354 29.1
320	36.24	0.48	0.03	43.91	20.68	8.68	353 57.4
330	36.04	0.86	0.05	45.28	20.73	8.70	353 25.7
340	35.89	1.38	0.08	46.65	20.76	8.71	352 54.1
350	35.80	1.97	0.12	48.02	20.78	8.71	352 22.4
360	35.77	2.60	0.16	49.40	20.79	8.72	351 50.7
370	35.81	+3.20	+0.19	50.77	-20.79	8.72	351 19.0

Mean Obliquity, 1857.0, ... 23° 27′ 27″.74

Precession for 1857.5, ... 50.2541

Log. Precession in a Sidereal Day, ... 9.13739

Log. Precession in a Solar Day, ... 9.13858

Daily Motion.

3′.169

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	—0.58511	+1.30126	—8.70586	—0.92757	Mar. 1	—1.25038	+0.80937	+9.13539	—0.97739
2	0.62044	1.29956	8.67099	0.92806	2	1.25283	0.78583	9.14283	0.97798
3	0.65298	1.29772	8.63317	0.92858	3	1.25513	0.76080	9.15008	0.97853
4	0.68312	1.29574	8.59207	0.92913	4	1.25729	0.73413	9.15716	0.97905
5	0.71116	1.29361	8.54691	0.92971	5	1.25930	0.70558	9.16409	0.97955
6	—0.73737	+1.29134	—8.49679	—0.93033	6	—1.26117	+0.67491	+9.17086	—0.98002
7	0.76196	1.28892	8.44028	0.93097	7	1.26290	0.64177	9.17746	0.98046
8	0.78510	1.28634	8.37548	0.93163	8	1.26449	0.60578	9.18392	0.98087
9	0.80693	1.28361	8.29994	0.93234	9	1.26595	0.56640	9.19026	0.98126
10	0.82758	1.28072	8.20898	0.93307	10	1.26727	0.52299	9.19649	0.98161
11	—0.84717	+1.27767	—8.09412	—0.93382	11	—1.26845	+0.47461	+9.20261	—0.98193
12	0.86578	1.27447	7.93902	0.93459	12	1.26949	0.42006	9.20861	0.98222
13	0.88349	1.27111	7.69723	0.93538	13	1.27041	0.35753	9.21451	0.98249
14	0.90037	1.26758	—7 11394	0.93620	14	1.27119	0.28435	9.22033	0.98273
15	0.91649	1.26388	+7.37293	0.93704	15	1.27183	0.19618	9.22606	0.98294
16	—0.93189	+1.26002	+7.77815	—0.93790	16	—1.27235	+0.08534	+9.23168	—0.98312
17	0.94663	1.25598	7.98272	0.93877	17	1.27273	9.93600	9.23721	0.98327
18	0.96076	1.25177	8.12024	0.93966	18	1.27298	9.70655	9.24266	0.98338
19	0.97431	1.24738	8.22350	0.94057	19	1.27311	+9.18924	9.24804	0.98346
20	0.98731	1.24280	8.30664	0.94149	20	1.27310	—9.29982	9.25334	0.98352
21	—0.99980	+1.23803	+8.37566	—0.94243	21	—1.27296	—9.74293	+9.25859	—0.98354
22	1.01181	1.23308	8.43473	0.94338	22	1.27269	9.95751	9.26380	0.98354
23	1.02336	1.22793	8.48671	0.94434	23	1.27229	0.10031	9.26893	0.98350
24	1.03447	1.22259	8.53263	0.94531	24	1.27176	0.20744	9.27400	0.98344
25	1.04517	1.21704	8.57380	0.94630	25	1.27111	0.29317	9.27903	0.98335
26	—1.05547	+1.21128	+8.61098	—0.94729	26	—1.27032	—0.36456	+9.28402	—0.98324
27	1.06540	1.20530	8.64473	0.94828	27	1.26940	0.42571	9.28896	0.98309
28	1.07497	1.19911	8.67594	0.94928	28	1.26835	0.47918	9.29387	0.98290
29	1.08420	1.19269	8.70484	0.95029	29	1.26717	0.52663	9.29874	0.98268
30	1.09310	1.18604	8.73167	0.95129	30	1.26585	0.56924	9.30358	0.98244
31	—1.10169	+1.17915	+8.75664	—0.95230	31	—1.26441	—0.60792	+9.30839	—0.98217
Feb. 1	1.10997	1.17201	8.78006	0.95332	Apr. 1	1.26283	0.64328	9.31317	0.98188
2	1.11796	1.16462	8.80209	0.95434	2	1.26112	0.67585	9.31792	0.98156
3	1.12566	1.15697	8.82284	0.95535	3	1.25927	0.70599	9.32263	0.98121
4	1.13310	1.14904	8.84242	0.95634	4	1.25729	0.73405	9.32732	0.98083
5	—1.14028	+1.14083	+8.86094	—0.95733	5	—1.25517	—0.76028	+9.33197	—0.98043
6	1.14720	1.13233	8.87850	0.95832	6	1.25292	0.78486	9.33660	0.98001
7	1.15388	1.12352	8.89521	0.95931	7	1.25053	0.80799	9.34122	0.97956
8	1.16032	1.11439	8.91114	0.96029	8	1.24800	0.82983	9.34585	0.97908
9	1.16654	1.10494	8.92634	0.96126	9	1.24532	0.85049	9.35048	0.97858
10	—1.17253	+1.09514	+8.94086	—0.96223	10	—1.24250	—0.87007	+9.35511	—0.97806
11	1.17830	1.08498	8.95481	0.96318	11	1.23954	0.88867	9.35970	0.97751
12	1.18386	1.07444	8.96820	0.96412	12	1.23644	0.90637	9.36427	0.97694
13	1.18921	1.06350	8.98104	0.96504	13	1.23318	0.92326	9.36884	0.97635
14	1.19437	1.05215	8.99335	0.96595	14	1.22977	0.93939	9.37340	0.97575
15	—1.19933	+1.04036	+9.00519	—0.96685	15	—1.22621	—0.95481	+9.37794	—0.97512
16	1.20410	1.02810	9.01662	0.96774	16	1.22250	0.96957	9.38247	0.97447
17	1.20868	1.01535	9.02764	0.96860	17	1.21862	0.98372	9.38698	0.97380
18	1.21308	1.00209	9.03826	0.96945	18	1.21459	0.99729	9.39152	0.97312
19	1.21730	0.98828	9.04853	0.97028	19	1.21040	1.01032	9.39608	0.97242
20	—1.22135	+0.97388	+9.05846	—0.97109	20	—1.20603	—1.02285	+9.40063	—0.97170
21	1.22522	0.95885	9.06807	0.97188	21	1.20150	1.03490	9.40516	0.97097
22	1.22893	0.94315	9.07737	0.97265	22	1.19680	1.04649	9.40966	0.97023
23	1.23247	0.92673	9.08636	0.97340	23	1.19193	1.05765	9.41417	0.96947
24	1.23585	0.90954	9.09511	0.97412	24	1.18687	1.06840	9.41867	0.96869
25	—1.23906	+0.89150	+9.10362	—0.97483	25	—1.18162	—1.07877	+9.42318	—0.96790
26	1.24212	0.87256	9.11189	0.97551	26	1.17619	1.08877	9.42770	0.96710
27	1.24503	0.85263	9.11992	0.97616	27	1.17057	1.09842	9.43220	0.96630
28	1.24778	0.83160	9.12775	0.97679	28	1.16475	1.10773	9.43669	0.96549
29	1.25038	0.80937	9.13539	0.97739	29	1.15873	1.11671	9.44119	0.96467
80	—1.25283	+0.78583	+9.14283	—0.97798	30	—1.15250	—1.12539	+9.44568	—0.96384
31	—1.25513	+0.76080	+9.15008	—0.97853	31	—1.14606	—1.13377	+9.45018	—0.96300

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Data.	A.	B.	C.	D.
May 1	—1.14606	—1.13377	+9.45018	—0.96300	July 1	+0.52154	—1.30366	+9.69798	—0.93566
2	1.13940	1.14187	9.45467	0.96216	2	0.55986	1.30230	9.70125	0.93600
3	1.13252	1.14969	9.45915	0.96131	3	0.59496	1.30081	9.70449	0.93636
4	1.12540	1.15724	9.46362	0.96046	4	0.62733	1.29920	9.70770	0.93675
5	1.11804	1.16454	9.46810	0.95960	5	0.65733	1.29746	9.71089	0.93716
6	—1.11043	—1.17160	+9.47258	—0.95874	6	+0.68528	—1.29559	+9.71404	—0.93760
7	1.10256	1.17842	9.47705	0.95789	7	0.71143	1.29360	9.71716	0.93806
8	1.09443	1.18501	9.48150	0.95704	8	0.73598	1.29147	9.72024	0.93855
9	1.08602	1.19137	9.48594	0.95619	9	0.75912	1.28921	9.72329	0.93907
10	1.07732	1.19752	9.49038	0.95534	10	0.78096	1.28682	9.72630	0.93961
11	—1.06832	—1.20346	+9.49482	—0.95449	11	+0.80165	—1.28430	+9.72928	—0.94017
12	1.05901	1.20920	9.49926	0.95365	12	0.82128	1.28163	9.73222	0.94076
13	1.04937	1.21474	9.50369	0.95282	13	0.83996	1.27884	9.73513	0.94137
14	1.03940	1.22008	9 50810	0.95199	14	0.85775	1.27590	9.73800	0.94200
15	1.02906	1.22524	9.51251	0.95116	15	0.87473	1.27281	9.74084	0.94265
16	—1.01835	—1.23021	+9.51692	—0.95034	16	+0.89096	—1.26959	+9.74364	—0.94332
17	1.00725	1.23501	9.52131	0.94953	17	0.90649	1.26622	9.74642	0.94401
18	0.99574	1.23963	9.52569	0.94874	18	0.92137	1.26270	9.74915	0.94471
19	0.98379	1.24407	9.53006	0.94797	19	0.93564	1.25903	9.75184	0.94543
20	0.97138	1.24835	9.53442	0.94720	20	0.94934	1.25520	9.75451	0.94618
21	—0.95848	—1.25247	+9.53876	—0.94645	21	+0.96252	—1 25122	+9.75714	—0.94694
22	0.94507	1.25642	9.54309	0.94571	22	0.97519	1.24708	9.75974	0.94770
23	0.93111	1.26022	9.54739	0.94499	23	0.98738	1.24278	9.76232	0.94848
24	0.91656	1.26386	9.55168	0.94428	24	0.99912	1.23831	9.76486	0.94927
25	0.90138	1.26735	9.55595	0.94358	25	1.01044	1.23367	9.76736	0.95007
26	—0.88554	—1.27070	+9.56022	—0.94290	26	+1.02136	—1.22886	+9.76982	—0.95088
27	0.86898	1.27389	9.56448	0.94225	27	1.03189	1.22387	9.77225	0.95170
28	0.85164	1.27693	9.56872	0.94162	28	1.04206	1.21870	9.77465	0.95254
29	0.83347	1.27984	9.57294	0.94101	29	1.05187	1.21335	9.77702	0.95338
30	0.81437	1.28260	9.57714	0.94041	30	1.06135	1.20780	9.77936	0.95428
31	—0.79428	—1.28523	+9.58131	—0.93983	31	+1.07051	—1.20205	+9.78167	—0.95508
June 1	0.77310	1.28771	9.58546	0.93928	Aug. 1	1.07937	1.19611	9.78395	0.95594
2	0.75071	1.29006	9.58958	0.93876	2	1.08794	1.18997	9.78620	0.95680
3	0.72698	1.29228	9.59368	0.93826	3	1.09622	1.18361	9.78842	0.95766
4	0.70177	1.29436	9.59777	0.93779	4	1.10422	1.17702	9.79061	0.95852
5	—0.67487	—1.29632	+9.60184	—0.93734	5	+1.11197	—1.17021	+9.79276	—0.95938
6	0.64607	1.29814	9.60587	0.93692	6	1.11947	1.16317	9.79488	0.96025
7	0.61511	1.29984	9.60988	0.93652	7	1.12672	1.15589	9.79697	0.96112
8	0.58166	1.30141	9.61388	0.93615	8	1.13373	1.14835	9.79904	0.96199
9	0.54528	1.30285	9.61786	0.93580	9	1.14052	1.14055	9.80108	0.96285
10	—0.50544	—1.30417	+9.62182	—0.93548	10	+1.14708	—1.13249	+9.80309	—0.96371
11	0.46146	1.30536	9.62574	0.93519	11	1.15343	1.12414	9.80507	0.96456
12	0.41238	1.30643	9.62961	0.93493	12	1.15957	1.11550	9.80702	0.96540
13	0.35692	1.30737	9.63347	0.93470	13	1.16550	1.10656	9.80895	0.96624
14	0.29318	1.30819	9.63731	0.93450	14	1.17124	1.09731	9.81084	0.96707
15	—0.21829	—1.30890	+9.64112	—0.93433	15	+1.17678	—1.08772	+9.81271	—0.96789
16	0.12765	1.30948	9.64490	0.93418	16	1.18214	1.07778	9.81455	0.96871
17	0.01279	1.30993	9.64865	0.93407	17	1.18731	1.06748	9.81637	0.96951
18	9.85600	1.31027	9.65237	0.93399	18	1.19230	1.05680	9.81817	0.97030
19	9.60800	1.31049	9.65606	0.93395	19	1.19712	1.04572	9.81995	0.97108
20	—8.96925	—1.31058	+9.65973	—0.93392	20	+1.20176	—1.03422	+9.82169	—0.97185
21	+9.34079	1.31056	9.66336	0.93393	21	1.20624	1.02228	9.82341	0.97260
22	9.72543	1.31042	9.66697	0.93397	22	1.21055	1.00986	9.82511	0.97333
23	9.92609	1.31015	9.67055	0.93404	23	1.21469	0.99695	9.82679	0.97405
24	0.06269	1.30976	9.67409	0.93413	24	1.21868	0.98351	9.82844	0.97476
25	+0.16635	—1.30926	+9.67760	—0.93426	25	+1.22251	—0.96951	+9.83008	—0.97545
26	0.24988	1.30864	9.68107	0.93442	26	1.22618	0.95491	9.83169	0.97612
27	0.31977	1.30788	9.68452	0.93461	27	1.22970	0.93966	9.83329	0.97676
28	0.37987	1.30701	9.68794	0.93483	28	1.23308	0.92373	9.83487	0.97739
29	0.43251	1.30602	9.69133	0.93508	29	1.23631	0.90706	9.83643	0.97801
30	+0.47937	—1.30490	+9.69468	—0.93536	30	+1.23939	—0.88959	+9.83796	—0.97860
31	+0.52154	—1.30366	+9.69798	—0.93566	31	+1.24232	—0.87124	+9.83948	—0.97917

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+1.24511	—0.85195	+9.84098	—0.97972	Nov. 1	+1.15886	+1.11652	+9.92329	—0.96348
2	1.24777	0.83162	9.84247	0.98025	2	1.15243	1.12549	9.92480	0.96254
3	1.25029	0.81015	9.84394	0.98075	3	1.14576	1.13415	9.92631	0.96160
4	1.25267	0.78743	9.84539	0.98123	4	1.13885	1.14252	9.92784	0.96065
5	1.25491	0.76330	9.84683	0.98169	5	1.13168	1.15060	9.92939	0.95969
6	+1.25702	—0.73760	+9.84825	—0.98212	6	+1.12425	+1.15841	+9.93094	—0.95872
7	1.25900	0.71014	9.84966	0.98252	7	1.11656	1.16595	9.93250	0.95775
8	1.26084	0.68068	9.85105	0.98290	8	1.10859	1.17323	9.93407	0.95678
9	1.26255	0.64891	9.85243	0.98326	9	1.10033	1.18027	9.93565	0.95581
10	1.26413	0.61449	9.85380	0.98359	10	1.09177	1.18707	9.93725	0.95484
11	+1.26559	—0.57692	+9.85517	—0.98389	11	+1.08289	+1.19364	+9.93886	—0.95387
12	1.26691	0 53564	9.85652	0.98417	12	1.07368	1.19998	9.94047	0.95291
13	1.26810	0.48984	9.85787	0.98442	13	1.06413	1.20610	9.94210	0.95195
14	1.26917	0.43849	9.85920	0.98464	14	1.05423	1.21200	9.94373	0.95099
15	1.27011	0.38003	9.86052	0.98483	15	1.04396	1.21769	9.94538	0.95004
16	+1.27092	—0.31228	+9.86184	—0.98500	16	+1.03329	+1.22318	+9.94703	—0.94909
17	1.27160	0.23177	9.86314	0.98513	17	1.02221	1.22847	9.94869	0.94815
18	1.27216	0.13263	9.86444	0.98523	18	1.01069	1.23356	9.95036	0.94722
19	1.27259	0.00370	9.86574	0.98531	19	0.99871	1.23846	9.95203	0.94630
20	1.27289	9.81921	9.86703	0.98536	20	0.98626	1.24317	9.95371	0.94540
21	+1.27307	—9.48299	+9.86832	—0.98538	21	+0.97330	+1.24771	+9.95540	—0.94451
22	1.27312	+8.59876	9.86960	0.98537	22	0.95979	1.25207	9.95710	0.94364
23	1.27304	9.59161	9.87087	0.98535	23	0.94570	1.25625	9.95881	0.94278
24	1.27283	9.86896	9.87214	0.98528	24	0.93099	1.26025	9.96052	0.94194
25	1.27250	0.03719	9.87341	0.98518	25	0.91563	1.26408	9.96224	0.94110
26	+1.27204	+0.15811	+9.87468	—0.98505	26	+0.89957	+1.26775	+9.96396	—0.94028
27	1.27145	0.25255	9.87595	0.98489	27	0.88274	1.27125	9.96569	0.93949
28	1.27073	0.32996	9.87722	0.98470	28	0.86509	1.27459	9.96742	0.93872
29	1.26988	0.39559	9.87848	0.98449	29	0.84653	1.27778	9.96915	0.93798
30	1.26890	0.45250	9.87974	0.98425	30	0.82700	1.28081	9.97089	0.93726
31	+1.26779	+0.50272	+9.88101	—0.98398	31	+0.80640	+1.28368	+9.97264	—0.93656
Oct. 1	1.26779	0.50272	9.88101	0.98398	Dec. 1	0.80640	1.28368	9.97264	0.93656
2	1.26655	0.54764	9.88228	0.98369	2	0.78462	1.28640	9.97439	0.93589
3	1.26518	0.58825	9.88355	0.98336	3	0.76154	1.28896	9.97614	0.93524
4	1.26367	0.62529	9.88483	0.98300	4	0.73702	1.29137	9.97789	0.93462
5	+1.26202	+0.65932	+9.88611	—0.98261	5	+0.71088	+1.29364	+9.97964	—0.93402
6	1.26024	0.69077	9.88739	0.98220	6	0.68290	1.29576	9.98139	0.93345
7	1.25832	0.71991	9.88867	0.98176	7	0.65285	1.29774	9.98314	0.93291
8	1.25626	0.74727	9.88996	0.98130	8	0.62039	1.29957	9.98488	0.93241
9	1.25406	0.77283	9.89125	0.98081	9	0.58516	1.30125	9.98663	0.93193
10	+1.25171	+0.79686	+9.89256	—0.98029	10	+0.54665	+1.30280	+9.98838	—0.93149
11	1.24922	0.81952	9.89387	0.97975	11	0.50423	1.30420	9.99013	0.93108
12	1.24658	0.84095	9.89519	0.97918	12	0.45704	1.30546	9.99188	0.93069
13	1.24380	0.86126	9.89651	0.97859	13	0.40393	1.30659	9.99363	0.93034
14	1.24087	0.88055	9.89784	0.97797	14	0.34325	1.30757	9.99537	0.93003
15	+1.23778	+0.89890	+9.89918	—0.97733	15	+0.27247	+1.30841	+9.99711	—0.92975
16	1.23454	0.91640	9.90052	0.97666	16	0.18773	1.30912	9.99885	0.92951
17	1.23114	0.93310	9.90186	0.97597	17	0.08212	1.30969	0.00058	0.92930
18	1.22757	0.94906	9.90321	0.97527	18	9.94212	1.31012	0.00230	0.92912
19	1.22384	0.96434	9.90457	0.97454	19	9.73395	1.31041	0.00402	0.92898
20	+1.21995	+0.97899	+9.90595	—0.97379	20	+9.31903	+1.31056	+0.00574	—0.92887
21	1.21589	0.99304	9.90735	0.97302	21	—9.09715	1.31058	0.00745	0.92878
22	1.21165	1.00652	9.90875	0.97223	22	9.66142	1.31046	0.00915	0.92875
23	1.20724	1.01947	9.91015	0.97142	23	9.89870	1.31020	0.01084	0.92875
24	1.20265	1.03193	9.91157	0.97059	24	0.05119	1.30980	0.01253	0.92878
25	+1.19787	+1.04392	+9.91300	—0.96975	25	—0.16370	+1.30927	+0.01421	—0.92886
26	1.19290	1.05547	9.91444	0.96890	26	0.25290	1.30860	0.01588	0.92896
27	1.18775	1.06658	9.91588	0.96803	27	0.32672	1.30779	0.01753	0.92911
28	1.18239	1.07729	9.91734	0.96714	28	0.38968	1.30684	0.01919	0.92929
29	1.17683	1.08764	9.91881	0.96624	29	0.44455	1.30575	0.02084	0.92949
30	+1.17106	+1.09761	+9.92029	—0.96533	30	—0.49312	+1.30452	+0.02247	—0.92973
31	+1.16507	+1.10723	+9.92179	—0.96441	31	—0.53670	+1.30315	+0.02409	—0.93001

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1857.		*f.*	Log. *g.*	G.	Log. *h.*	H.	Log. *i.*	T.
		″		° ′		° ′		
January	1	− 2.34	0.9307	263 8	1.3091	349 7	—0.2226	0.000
	6	1.45	0.9315	265 46	1.3077	344 24	0.3748	0.014
	11	− 0.57	0.9340	268 20	1.3056	339 38	0.4846	0.027
	16	+ 0.28	0.9379	270 48	1.3032	334 50	0.5694	0.041
	21	1.09	0.9431	273 7	1.3006	329 59	0.6373	0.055
	26	+ 1.88	0.9491	275 17	1.2976	325 4	—0.6929	0.068
	31	2.63	0.9558	277 17	1.2944	320 5	0.7392	0.082
February	5	3.35	0.9628	279 7	1.2910	315 2	0.7777	0.096
	10	4.02	0.9700	280 48	1.2877	309 55	0.8100	0.110
	15	4.66	0.9770	282 21	1.2846	304 45	0.8368	0.123
	20	+ 5.27	0.9838	283 47	1.2816	299 30	—0.8588	0.137
	25	5.85	0.9901	285 6	1.2789	294 11	0.8765	0.151
March	2	6.40	0.9959	286 21	1.2767	288 50	0.8903	0.164
	7	6.93	1.0011	287 31	1.2750	283 27	0.9004	0.178
	12	7.45	1.0057	288 40	1.2738	278 3	0.9070	0.192
	17	+ 7.96	1.0097	289 48	1.2732	272 38	—0.9102	0.205
	22	8.46	1.0132	290 56	1.2732	267 14	0.9102	0.219
	27	8.96	1.0162	292 5	1.2738	261 50	0.9069	0.233
April	1	9.48	1.0187	293 16	1.2750	256 30	0.9002	0.246
	6	10.00	1.0210	294 30	1.2767	251 13	0.8904	0.260
	11	+10.55	1.0231	295 48	1.2789	245 59	—0.8770	0.274
	16	11.12	1.0252	297 10	1.2814	240 49	0.8600	0.287
	21	11.71	1.0275	298 36	1.2843	235 44	0.8390	0.301
	26	12.34	1.0299	300 5	1.2873	230 44	0.8137	0.315
May	1	12.99	1.0328	301 37	1.2905	225 49	0.7835	0.329
	6	+13.68	1.0361	303 12	1.2936	220 59	—0.7479	0.342
	11	14.40	1.0402	304 50	1.2968	216 13	0.7058	0.356
	16	15.15	1.0451	306 29	1.2997	211 33	0.6558	0.370
	21	15.93	1.0506	308 7	1.3024	206 56	0.5959	0.383
	26	16.74	1.0568	309 43	1.3047	202 23	0.5230	0.397
	31	+17.57	1.0640	311 18	1.3067	197 54	—0.4317	0.411
June	5	18.42	1.0719	312 48	1.3083	193 27	0.3123	0.424
	10	19.29	1.0804	314 15	1.3095	189 2	0.1429	0.438
	15	20.17	1.0894	315 36	1.3103	184 38	9.8558	0.452
	20	21.05	1.0989	316 51	1.3105	180 16	—8.6067	0.465
	25	+21.93	1.1087	318 0	1.3104	175 53	+9.8038	0.479
	30	22.81	1.1188	319 3	1.3097	171 30	0.1168	0.493
July	5	23.68	1.1289	319 59	1.3085	167 6	0.2948	0.407
	10	24.54	1.1392	320 50	1.3069	162 40	0.4184	0.520
	15	25.37	1.1491	321 34	1.3049	158 12	0.5122	0.534
	20	+26.18	1.1589	322 13	1.3026	153 41	+0.5868	0.548
	25	26.97	1.1684	322 47	1.3001	149 7	0.6479	0.561
	30	27.72	1.1775	323 16	1.2972	144 29	0.6988	0.575
August	4	28.45	1.1864	323 43	1.2942	139 47	0.7417	0.589
	9	29.15	1.1948	324 7	1.2910	135 0	0.7780	0.602
	14	+29.81	1.2026	324 27	1.2879	130 9	+0.8087	0.616
	19	30.44	1.2100	324 46	1.2849	125 13	0.8346	0.630
	24	31.04	1.2169	325 4	1.2820	120 12	0.8562	0.643
	29	31.62	1.2234	325 22	1.2794	115 6	0.8738	0.657
September	3	32.17	1.2295	325 40	1.2772	109 57	0.8878	0.671
	8	+32.71	1.2350	325 58	1.2754	104 44	+0.8983	0.684
	13	33.22	1.2401	326 17	1.2741	99 28	0.9056	0.698
	18	33.72	1.2449	326 38	1.2733	94 9	0.9096	0.712
	23	34.23	1.2494	327 1	1.2731	88 48	0.9105	0.726
	28	34.73	1.2537	327 26	1.2736	83 28	0.9082	0.739
October	3	+35.24	1.2579	327 54	1.2746	78 7	+0.9026	0.753
	8	35.76	1.2620	328 24	1.2761	72 47	0.8937	0.767
	13	36.31	1.2659	328 56	1.2782	67 29	0.8813	0.780

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1857.	*f.*	Log. *g.*	G.	Log. *h.*	H.	Log. *i.*	τ.
	"		° '		° '		
October 18	+36.88	1.2700	329 31	1.2807	62 14	+0.8650	0.794
23	37.47	1.2742	330 8	1.2836	57 1	0.8447	0.808
28	38.09	1.2786	330 47	1.2866	51 52	0.8199	0.821
November 2	38.75	1.2834	331 28	1.2899	46 47	0.7899	0.835
7	39.44	1.2883	332 9	1.2931	41 45	0.7540	0.849
12	+40.18	1.2934	332 50	1.2964	36 47	+0.7111	0.862
17	40.94	1.2991	333 32	1.2994	31 53	0.6597	0.876
22	41.74	1.3049	334 12	1.3022	27 2	0.5973	0.890
27	42.58	1.3111	334 51	1.3048	22 14	0.5202	0.903
December 2	43.44	1.3176	335 28	1.3069	17 29	0.4221	0.917
7	+44.32	1.3244	336 3	1.3086	12 46	+0.2903	0.931
12	45.22	1.3314	336 35	1.3099	8 4	0.0945	0.945
17	46.14	1.3386	337 4	1.3104	3 23	+9.7196	0.958
22	47.06	1.3459	337 30	1.3106	358 43	—9.2989	0.972
27	47.98	1.3530	337 52	1.3101	854 2	9.9642	0.986
32	+48.89	1.3601	338 10	1.3092	349 21	—0.2138	0.999

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND THE NOTATION OF THE CATALOGUE OF STARS OF THE BRITISH ASSOCIATION.

$$A = -20''.4451 \cos \omega \cos \odot.$$

$$B = -20''.4451 \sin \odot.$$

$$C = \tau - 0''.34238 \sin \text{☊} + 0''.00410 \sin 2\,\text{☊} - 0''.02519 \sin 2\,\odot.$$
$$+ 0''.00294 \sin (\odot + 82^\circ\ 34') - 0''.00405 \sin 2\,\text{☾} + 0''.00135 \sin (\text{☾} - \Gamma').$$

$$D = -9''.2236 \cos \text{☊} + 0''.0896 \cos 2\,\text{☊} - 0''.5507 \cos 2\,\odot - 0''.0092 \cos (\odot + 280^\circ\ 22').$$
$$- 0.0885 \cos 2\,\text{☾}.$$

$$E = -0''.0481 \sin \text{☊} + 0''.0014 \sin 2\,\text{☊} - 0''.0034 \sin 2\,\odot.$$

$a = \cos \alpha \sec \delta.$
$b = \sin \alpha \sec \delta.$
$c = 46''.0780 + 20''.0560 \sin \alpha \tan \delta.$
$d = \cos \alpha \tan \delta.$

$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta.$
$b' = \cos \alpha \sin \delta.$
$c' = 20''.0560 \cos \alpha.$
$d' = -\sin \alpha.$

μ = the annual proper motion in right ascension.
μ' = the annual proper motion in declination.

τ = the time from the beginning of the year in fractional parts of the year.
$\odot$ = the sun's longitude.
☾ = the moon's longitude.
☊ = the longitude of the moon's ascending node.
ω = the obliquity of the ecliptic.
α = the star's mean right ascension for the beginning of the year.
δ = the star's mean declination for the beginning of the year.
α' = the star's apparent right ascension at the time τ.
δ' = the star's apparent declination at the time τ.

$$\alpha' - \alpha = A\,a + B\,b + C\,c + D\,d + E + \tau\mu.$$
$$\delta' - \delta = A\,a' + B\,b' + C\,c' + D\,d' + \tau\mu'.$$

The following formulæ may also be used by putting

$f = 46''.0780\ C.$ $\qquad i = A \tan \omega.$
$g \cos G = 20''.0560\ C.$ $\qquad h \cos H = B.$
$g \sin G = D.$ $\qquad h \sin H = A.$

$$\alpha' - \alpha = f + \tau\mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta.$$
$$\delta' - \delta = i \cos \delta + \tau\mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta.$$

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1857.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h. m. s.	s.	° ′ ″	″
α Andromedæ	2	0 1 0.14	+ 3.086	+28 18 3.1	+19.90
γ Pegasi (*Algenib*)	3.2	0 5 52.54	3.084	+14 23 18.1	20.04
β Hydri	3	0 18 10.20	3.290	—78 3 37.7	20.24
α Cassiopeæ	var.	0 32 25.00	3.359	+55 45 8.9	19.83
β Ceti	2	0 36 24.50	3.016	—18 46 20.4	19.82
α Urs. Min. (*Polaris*)	2	1 7 6.88	+18.460	+88 32 49.8	+19.20
θ^1 Ceti	3	1 16 52.60	3.000	— 8 55 21.2	18.74
α Eridani (*Achernar*)	1	1 32 22.96	2.238	—57 57 51.1	18.45
α Arietis	2	1 59 7.18	3.365	+22 47 3.1	17.29
γ Ceti	3.4	2 35 53.63	3.102	+ 2 37 50.5	15.40
α Ceti	2.3	2 54 48.42	+ 3.129	+ 3 31 33.6	+14.40
α Persei	2	3 14 8.00	4.243	+49 20 53.5	13.25
η Tauri	3	3 38 59.40	3.553	+23 39 34.2	11.54
γ^1 Eridani	3	3 51 21.48	2.796	—13 55 6.1	10.58
α Tauri (*Aldebaran*)	1	4 27 43.12	3.436	+16 13 5.1	7.68
α Aurigæ (*Capella*)	1	5 6 7.88	+ 4.420	+45 50 49.9	+ 4.25
β Orionis (*Rigel*)	1	5 7 39.98	2.880	— 8 22 13.2	4.54
β Tauri	2	5 17 15.32	3.791	+28 28 55.4	3.52
δ Orionis	2	5 24 42.15	3.066	— 0 24 31.6	3.05
α Leporis	3	5 26 25.47	2.648	—17 55 40.1	2.94
ε Orionis	2	5 28 57.49	+ 3.044	— 1 17 48.9	+ 2.71
α Columbæ	2	5 34 28.39	2.177	—34 9 9.5	2.23
α Orionis	var.	5 47 25.85	3.249	+ 7 22 35.1	+ 1.11
μ Geminorum	3	6 14 18.54	3.636	+22 34 57.2	— 1.39
α Argus (*Canopus*)	1	6 20 46.79	1.330	—52 37 8.3	1.81
51 (Hev.) Cephei	5	6 32 6.55	+30.496	+87 15 2 3	— 2.88
α Canis Maj. (*Sirius*)	1	6 38 50.69	2.646	—16 31 23.6	4.61
ε Canis Majoris	2.1	6 53 0.38	2.360	—28 46 49.9	4.60
δ Geminorum	3.4	7 11 34.81	3.597	+22 14 29.5	6.17
α^2 Geminor. (*Castor*)	2.1	7 25 28.22	3.847	+32 11 51.5	7.39
α Can. Min. (*Procyon*)	1	7 31 48.81	+ 3.145	+ 5 35 18.3	— 8.55
β Geminor. (*Pollux*)	1.2	7 36 33 59	3.681	+28 22 3.3	8.25
15 Argus	3	8 1 27.27	2.558	—23 53 40.8	10.06
ε Hydræ	3.4	8 39 12.06	3.189	+ 6 56 26.6	12.86
ι Ursæ Majoris	3	8 49 23.78	4.143	+48 35 59.1	13.78
ι Argus	2	9 13 15.72	+ 1.602	—58 40 33.1	—14.89
α Hydræ	2	9 20 33.56	2.951	— 8 2 27.2	15.36
θ Ursæ Majoris	3	9 23 16.06	4.059	+52 19 34.0	16.11
ε Leonis	3	9 37 43.65	3.424	+24 25 50.0	16.34
α Leonis (*Regulus*)	1.2	10 0 45.13	3.205	+12 39 52.0	17.40
η Argus	2	10 39 31.35	+ 2.305	—58 55 59.0	—18.73
α Ursæ Majoris	2	10 54 52.11	3.778	+62 31 18.8	19.34
δ Leonis	2.3	11 6 29.88	3.208	+21 18 23.4	19.65
δ Hydræ et Crateris	3.4	11 12 11.58	+ 2.997	—14 0 19.2	—19.45

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1857.

Star's Name.	Magnitude.	Right Ascension.			An. Variation.	Declination.			An. Variation.
		h.	m.	s.	s.	°	′	″	″
β Leonis . . .	2	11	41	45.73	+ 3.066	+15	22	17.0	—20.09
γ Ursæ Majoris .	2.3	11	46	17.39	3.195	+54	29	23.1	20.04
β Chamæleontis .	5	12	10	2.68	3.316	—78	31	5.4	20.05
α^1 Crucis . . .	1	12	18	40.32	3.257	—62	18	19.9	19.94
β Corvi . . .	2.3	12	26	52.82	3.132	—22	36	19.5	19.99
12 Canum Venaticorum	3	12	49	19.87	+ 2.822	+39	5	29.5	—19.56
α Virginis (*Spica*)	1	13	17	39.81	3.152	—10	24	49.3	18.97
η Ursæ Majoris .	2	13	41	54.07	2.371	+50	1	41.7	18.14
η Bootis . .	3	13	47	52.55	2.862	+19	6	58.4	18.23
β Centauri . .	1	13	53	46.23	4.151	—59	40	49.7	17.72
α Bootis (*Arcturus*)	1	14	9	8.36	+ 2.734	+19	55	43.6	—18.94
α^2 Centauri . .	1	14	29	55.92	4.024	—60	14	23.5	15.09
ε Bootis . . .	2.3	14	38	44.46	2.622	+27	40	44.9	15.44
α^2 Libræ . . .	3	14	42	58.41	+ 3.304	—15	26	41.7	15.27
β Ursæ Minoris .	2	14	51	10.12	— 0.262	+74	44	23.0	14.78
β Libræ . . .	2	15	9	18.95	+ 3.220	— 8	51	8.3	—13.60
α Coronæ Borealis	2	15	28	38.02	2.539	+27	11	54.3	12.38
α Serpentis . .	2.3	15	37	13.56	+ 2.950	+ 6	52	42.7	11.65
ζ Ursæ Minoris .	4.5	15	49	15.51	— 2.315	+78	13	56.3	10.82
β^1 Scorpii . . .	2	15	57	7.62	+ 3.479	—19	24	37.3	10.28
δ Ophiuchi . .	3	16	6	51.24	+ 3.138	— 3	19	21.8	— 9.63
α Scorpii (*Antares*)	1.2	16	20	38.71	3.669	—26	6	38.0	8.46
η Draconis . .	3.2	16	22	4.09	0.821	+61	50	19.8	8.23
α Trianguli Australis	2	16	33	33.98	+ 6.269	—68	45	27.8	7.47
ε Ursæ Minoris . .	4.5	17	0	45.36	— 6.501	+82	15	56.4	5.12
α Herculis . .	var.	17	8	7.63	+ 2.734	+14	33	23.7	— 4.47
β Draconis . .	3.2	17	27	12.18	1.353	+52	24	31.7	2.85
α Ophiuchi . .	2	17	28	17.79	2.781	+12	40	2.9	2.96
σ Octantis . .	6	17	42	40.61	108.920	—89	16	36.5	1.42
γ Draconis . .	2.3	17	53	17.18	1.394	+51	30	25.9	— 0.62
μ^1 Sagittarii . .	4	18	5	12.59	+ 3.587	—21	5	31.2	+ 0.47
δ Ursæ Minoris .	4.5	18	18	28.42	—19.336	+86	36	2.2	1.63
α Lyræ (*Vega*) .	1	18	32	5.73	+ 2.032	+38	39	11.0	3.07
β Lyræ . .	var.	18	44	47.97	2.215	+33	11	56.7	3.87
ζ Aquilæ . .	3	18	58	50.15	2.755	+13	39	15.2	5.03
δ Aquilæ . .	3.4	19	18	17.21	+ 3.027	+ 2	49	59.0	+ 6.82
γ Aquilæ . .	3	19	39	27.61	2.854	+10	16	4.3	8.44
α Aquilæ (*Altair*)	1.2	19	43	48.29	2.925	+ 8	29	37.9	9.15
β Aquilæ . .	4	19	48	17.28	+ 2.947	+ 6	3	9.6	8.65
λ Ursæ Minoris .	5	20	6	40.41	—55.428	+88	52	53.2	10.50
α^2 Capricorni . .	3.4	20	10	6.97	+ 3.333	—12	59	5.5	+10.81
α Pavonis . .	2	20	14	18.79	4.803	—57	11	17.8	11.06
α Cygni . . .	2.1	20	36	33.39	2.044	+44	46	16.2	12.65
61^1 Cygni . .	5.6	21	0	29.20	+ 2.676	+38	2	54.4	+17.46

MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1857.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h. m. s.	s.	° ′ ″	″
ζ Cygni . . .	3	21 6 51.03	+ 2.550	+29 38 32.5	+14.53
α Cephei . .	3.2	21 15 9.76	1.439	+61 58 50.1	15.10
β Aquarii . .	3	21 24 1.62	3.163	— 6 11 52.6	15.61
β Cephei . .	3	21 26 47.88	0.805	+69 56 0.1	15.69
ε Pegasi . . .	2.3	21 37 9.73	2.951	+ 9 13 16.8	16.30
α Aquarii . .	3	21 58 26.19	+ 3.085	— 1 0 46.4	+17.30
α Gruis . . .	2	21 59 12.04	3.821	—47 39 3.2	17.15
ζ Pegasi . .	3.4	22 34 19.69	2.990	+10 5 10.3	18.69
α Pis. Aus. (*Fomalhaut*)	1.2	22 49 44.34	3.334	—30 22 44.8	18.97
α Pegasi (*Markab*)	2	22 57 38.37	2.985	+14 26 12.3	19.30
ι Piscium . . .	4.5	23 32 35.78	+ 3.084	+ 4 51 6.0	+19.47
γ Cephei . .	3.4	23 33 30.66	+ 2.392	+76 50 3.9	+20.07

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m. 1 6	° ′ 88 33	h. m. 1 6	° ′ 88 33	h. m. 1 5	° ′ 88 32	h. m. 1 5	° ′ 88 32	
	s	″	s	″	s.	″	s.	″	
1	50.36	11.43	24.48	11.35	65.80	66.33	57.04	57.51	1
2	49.53	11.53	23.69	11.24	65.29	66.09	57.01	57.20	2
3	48.69	11.62	22.91	11.14	64.80	65.84	57.00	56.89	3
4	47.86	11.70	22.14	11.02	64.33	65.59	57.00	56.59	4
5	47.02	11.78	21.37	10.89	63.87	65.34	57.02	56.28	5
6	46.17	11.85	20.61	10.76	63.42	65.08	57.06	55.98	6
7	45.33	11.91	19.85	10.63	62.99	64.81	57.12	55.68	7
8	44.49	11.96	19.11	10.49	62.57	64.54	57.19	55.38	8
9	43.65	12.01	18.38	10.34	62.16	64.27	57.29	55.08	9
10	42.80	12.05	17.65	10.18	61.77	64.00	57.40	54.78	10
11	41.95	12.09	16.93	10.02	61.39	63.73	57.52	54.48	11
12	41.09	12.13	16.22	9.86	61.03	63.45	57.64	54.18	12
13	40.24	12.15	15.52	9.70	60.68	63.17	57.78	53.88	13
14	39.40	12.17	14.83	9.53	60.34	62.89	57.94	53.58	14
15	38.55	12.18	14.15	9.35	60.02	62.61	58.12	53.28	15
16	37.70	12.18	13.48	9.17	59.71	62.32	58.32	52.99	16
17	36.85	12.18	12.81	8.98	59.42	62.03	58.54	52.70	17
18	36.01	12.17	12.16	8.78	59.14	61.74	58.77	52.41	18
19	35.16	12.16	11.52	8.58	58.88	61.45	59.02	52.12	19
20	34.32	12.14	10.89	8.38	58.64	61.15	59.28	51.83	20
21	33.49	12.11	10.28	8.17	58.41	60.85	59.55	51.55	21
22	32.65	12.07	9.68	7.95	58.20	60.55	59.83	51.27	22
23	31.81	12.02	9.08	7.73	58.00	60.25	60.13	50.99	23
24	30.98	11.98	8.50	7.51	57.82	59.95	60.45	50.71	24
25	30.15	11.92	7.93	7.28	57.66	59.65	60.79	50.44	25
26	29.32	11.85	7.38	7.05	57.52	59.35	61.14	50.17	26
27	28.50	11.78	6.84	6.82	57.40	59.04	61.50	49.90	27
28	27.68	11.70	6.31	6.58	57.30	58.74	61.88	49.63	28
29	26.87	11.62	5.80	6.33	57.21	58.43	62.28	49.37	29
30	26.07	11.54	. .	. .	57.14	58.13	62.68	49.11	30
31	25.27	11.45	. .	. .	57.08	57.82	63.10	48.85	31
32	24.48	11.35	. .	. .	57.04	57.51	63.53	48.60	32

APPARENT PLACES OF *a* URSÆ MINORIS (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m. 1 6	° ′ 88 32	h. m. 1 6	° ′ 88 32	h. m. 1 6	° ′ 88 32	h. m. 1 7	° 88 32	
1	s. 3.10	48″.85	s 21.79	42″.84	s. 46.75	41″.62	s. 12.98	45″.52	1
2	3.53	48.60	22.56	42.72	47.62	41.67	13.76	45.72	2
3	3.98	48.35	23.33	42.61	48.49	41.73	14.53	45.93	3
4	4.44	48.10	24.10	42.50	49.36	41.78	15.31	46.14	4
5	4.91	47.85	24.88	42.39	50.23	41.84	16.07	46.36	5
6	5.39	47.60	25.67	42.30	51.11	41.91	16.84	46.58	6
7	5.88	47.36	26.47	42.21	51.98	41.98	17.59	46.82	7
8	6.39	47.13	27.27	42.12	52.84	42.06	18.34	47.06	8
9	6.90	46.90	28.08	42.04	53.71	42.15	19.08	47.30	9
10	7.43	46.68	28.89	41.96	54.58	42.25	19.81	47.54	10
11	7.97	46.45	29.71	41.89	55.44	42.35	20.55	47.78	11
12	8.53	46.24	30.53	41.83	56.31	42.45	21.28	48.03	12
13	9.10	46.03	31.35	41.77	57.18	42.55	22.00	48.28	13
14	9.67	45.82	32.18	41.71	58.04	42.65	22.72	48.54	14
15	10.26	45.62	33.02	41.66	58.89	42.76	23.43	48.81	15
16	10.86	45.42	33.85	41.61	59.74	42.88	24.12	49.07	16
17	11.47	45.22	34.70	41.57	60.59	43.01	24.81	49.35	17
18	12.09	45.02	35.55	41.54	61.43	43.14	25.49	49.63	18
19	12.72	44.84	36.40	41.52	62.27	43.28	26.16	49.91	19
20	13.35	44.66	37.25	41.50	63.12	43.42	26.82	50.19	20
21	13.99	44.48	38.10	41.49	63.97	43.57	27.47	50.48	21
22	14.65	44.31	38.96	41.48	64.81	43.72	28.11	50.77	22
23	15.32	44.14	39.81	41.47	65.65	43.88	28.74	51.07	23
24	16.00	43.97	40.67	41.47	66.48	44.05	29.37	51.37	24
25	16.69	43.81	41.53	41.47	67.30	44.22	29.99	51.67	25
26	17.40	43.66	42.40	41.48	68.13	44.39	30.60	51.97	26
27	18.11	43.51	43.26	41.50	68.94	44.57	31.19	52.27	27
28	18.83	43.36	44.13	41.53	69.75	44.75	31.77	52.59	28
29	19.55	43.22	45.00	41.56	70.57	44.94	32.35	52.90	29
30	20.28	43.09	45.87	41.59	71.38	45.13	32.94	53.22	30
31	21.03	42.96	46.75	41.62	72.18	45.32	33.50	53.53	31
32	21.79	42.84	47.62	41.67	72.98	45.52	34.04	53.86	32

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m. 1 7	° ′ 88 32	h. m. 1 7	° ′ 88 33	h. m. 1 7	° ′ 88 33	h. m. 1 7	° 88 33	
1	s. 34.04	″ 53.86	s. 45.61	″ 4.69	s. 45.82	″ 16.65	s. 33.99	″ 26.62	1
2	34.59	54.19	45.81	5.07	45.61	17.02	33.40	26.89	2
3	35.13	54.52	45.99	5.46	45.38	17.39	32.80	27.17	3
4	35.65	54.85	46.16	5.85	45.14	17.75	32.19	27.44	4
5	36.16	55.19	46.33	6.24	44.88	18.12	31.57	27.70	5
6	36.66	55.53	46.48	6.62	44.62	18.48	30.94	27.96	6
7	37.14	55.87	46.62	7.01	44.35	18.84	30.31	28.21	7
8	37.61	56.21	46.74	7.40	44.06	19.20	29.67	28.46	8
9	38.08	56.56	46.86	7.78	43.76	19.56	29.02	28.70	9
10	38.55	56.91	46.97	8.17	43.45	19.91	28.36	28.94	10
11	39.01	57.26	47.06	8.57	43.13	20.26	27.70	29.17	11
12	39.45	57.62	47.12	8.96	42.80	20.61	27.03	29.40	12
13	39.87	57.98	47.17	9.35	42.45	20.96	26.35	29.62	13
14	40.28	58.34	47.21	9.75	42.09	21.30	25.66	29.84	14
15	40.68	58.70	47.25	9.14	41.71	21.64	24.95	30.04	15
16	41.08	59.06	47.28	10.53	41.32	21.98	24.23	30.24	16
17	41.47	59.42	47.28	10.92	40.92	22.32	23.50	30.45	17
18	41.85	59.78	47.27	11.31	40.51	22.65	22.77	30.64	18
19	42.21	60.15	47.25	11.70	40.09	22.98	22.04	30.83	19
20	42.56	60.52	47.23	12.10	39.65	23.29	21.29	31.01	20
21	42.90	60.89	47.19	12.49	39.20	23.62	20.54	31.19	21
22	43.22	61.26	47.13	12.87	38.74	23.93	19.78	31.36	22
23	43.54	61.64	47.05	13.25	38.27	24.24	19.01	31.52	23
24	43.84	62.02	46.96	13.63	37.79	24.55	18.24	31.68	24
25	44.13	62.40	46.86	14.01	37.29	24.86	17.46	31.83	25
26	44.41	62.78	46.75	14.39	36.78	25.17	16.68	31.97	26
27	44.68	63.16	46.64	14.77	36.25	25.46	15.89	32.11	27
28	44.93	63.54	46.51	15.15	35.70	25.75	15.10	32.25	28
29	45.17	63.93	46.36	15.52	35.14	26.04	14.29	32.38	29
30	45.39	64.31	46.19	15.90	34.57	26.33	13.48	32.50	30
31	45.61	64.69	46.01	16.28	33.99	26.62	12.66	32.61	31
32	45.81	65.07	45.82	16.65	33.40	26.89	11.85	32.71	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m. 18 18	° ′ 86 35	h. m. 18 18	° ′ 86 35	h. m. 18 18	° ′ 86 35	h. m. 18 18	° ′ 86 35	
1	s. 5.85	″ 51.18	s. 8.71	″ 41.24	s. 16.19	″ 35.23	s. 26.93	″ 33.89	1
2	5.84	50.83	8.91	40.96	16.52	35.09	27.27	33.95	2
3	5.83	50.49	9.11	40.69	16.85	34.96	27.62	34.02	3
4	5.83	50.15	9.32	40.42	17.18	34.84	27.97	34.09	4
5	5.84	49.81	9.53	40.16	17.51	34.72	28.31	34.17	5
6	5.86	49.46	9.76	39.90	17.84	34.60	28.65	34.25	6
7	5.88	49.12	9.99	39.64	18.18	34.49	28.99	34.34	7
8	5.91	48.78	10.22	39.38	18.52	34.39	29.33	34.43	8
9	5.94	48.45	10.46	39.13	18.86	34.30	29.66	34.53	9
10	5.98	48.12	10.70	38.89	19.20	34.22	29.99	34.63	10
11	6.03	47.79	10.95	38.65	19.54	34.14	30.32	34.74	11
12	6.09	47.46	11.20	38.42	19.89	34.06	30.65	34.87	12
13	6.15	47.12	11.46	38.19	20.23	33.99	30.97	35.00	13
14	6.23	46.79	11.72	37.96	20.58	33.93	31.29	35.13	14
15	6.31	46.46	11.99	37.74	20.93	33.88	31.60	35.26	15
16	6.40	46.13	12.27	37.52	21.29	33.83	31.92	35.40	16
17	6.49	45.80	12.55	37.31	21.64	33.78	32.23	35.54	17
18	6.59	45.48	12.83	37.11	21.99	33.74	32.53	35.69	18
19	6.70	45.16	13.12	36.90	22.35	33.71	32.83	35.85	19
20	6.81	44.84	13.41	36.70	22.70	33.69	33.13	36.01	20
21	6.93	44.53	13.70	36.51	23.06	33.67	33.43	36.18	21
22	7.05	44.21	14.00	36.33	23.41	33.66	33.72	36.35	22
23	7.19	43.90	14.30	36.16	23.77	33.66	34.01	36.53	23
24	7.33	43.60	14.61	35.99	24.13	33.66	34.29	36.71	24
25	7.48	43.29	14.92	35.83	24.48	33.66	34.57	36.90	25
26	7.64	42.98	15.23	35.67	24.84	33.67	34.85	37.09	26
27	7.80	42.68	15.55	35.52	25.19	33.69	35.12	37.28	27
28	7.97	42.39	15.87	35.37	25.53	33.72	35.38	37.48	28
29	8.15	42.10	16.19	35.23	25.88	33.76	35.64	37.69	29
30	8.33	41.81	. .	. .	26.23	33.80	35.90	37.90	30
31	8.52	41.52	. .	. .	26.58	33.84	36.16	38.12	31
32	8.71	41.24	. .	. .	26.93	33.89	36.41	38.34	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m.	° ′	h. m.	° ′	h. m.	° ′	h. m.	° ′	
	18 18	86 35	18 18	86 35	18 18	86 35	18 18	86 36	
	s.	″	s.	″	s.	″	s.	″	
1	36.16	38.12	41.40	46.54	40.86	56.15	34.56	5.13	1
2	36.41	38.34	41.48	46.85	40.74	56.47	34.28	5.38	2
3	36.66	38.56	41.55	47.15	40.62	56.78	33.98	5.62	3
4	36.90	38.79	41.61	47.47	40.49	57.09	33.68	5.86	4
5	37.14	39.02	41.66	47.79	40.36	57.40	33.38	6.10	5
6	37.37	39.26	41.71	48.11	40.22	57.72	33.07	6.34	6
7	37.60	39.50	41.75	48.43	40.07	58.03	32.77	6.57	7
8	37.82	39.75	41.79	48.75	39.91	58.34	32.46	6.80	8
9	38.03	40.00	41.82	49.07	39.75	58.65	32.14	7.01	9
10	38.24	40.25	41.85	49.39	39.59	58.96	31.81	7.23	10
11	38.44	40.51	41.86	49.71	39.42	59.26	31.48	7.45	11
12	38.64	40.77	41.87	50.03	39.24	59.56	31.15	7.67	12
13	38.84	41.03	41.88	50.35	39.06	59.86	30.82	7.88	13
14	39.03	41.29	41.87	50.67	38.88	60.16	30.48	8.08	14
15	39.21	41.56	41.86	50.99	38.69	60.45	30.14	8.28	15
16	39.39	41.83	41.85	51.32	38.49	60.75	29.80	8.48	16
17	39.56	42.10	41.83	51.64	38.28	61.04	29.45	8.68	17
18	39.72	42.38	41.80	51.97	38.07	61.33	29.09	8.87	18
19	39.88	42.66	41.77	52.30	37.85	61.62	28.73	9.06	19
20	40.03	42.94	41.73	52.62	37.63	61.91	28.37	9.25	20
21	40.18	43.23	41.68	52.94	37.40	62.19	28.00	9.43	21
22	40.32	43.52	41.62	53.27	37.17	62.47	27.63	9.60	22
23	40.46	43.81	41.56	53.59	36.93	62.75	27.26	9.77	23
24	40.59	44.11	41.50	53.90	36.69	63.02	26.89	9.94	24
25	40.71	44.41	41.43	54.21	36.44	63.29	26.52	10.11	25
26	40.83	44.71	41.35	54.53	36.19	63.56	26.14	10.27	26
27	40.94	45.01	41.26	54.86	35.93	63.83	25.76	10.42	27
28	41.05	45.31	41.16	55.19	35.66	64.09	25.37	10.57	28
29	41.15	45.61	41.06	55.51	35.39	64.36	24.98	10.71	29
30	41.24	45.92	40.96	55.83	35.12	64.62	24.58	10.85	30
31	41.32	46.23	40.86	56.15	34.84	64.88	24.18	10.99	31
32	41.40	46.54	40.74	56.47	34.56	65.13	23.78	11.12	32

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Sidereal Day of the Month.
	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	R.A.	Dec. *North.*	
	h. m. 18 18	° ′ 86 36	h. m. 18 17	° ′ 86 36	h. m. 18 17	° ′ 86 36	h. m. 18 17	° ′ 86 35	
	s.	″	s.	″	s.	″	s.	″	
1	23.78	11.12	71.06	12.93	58.16	10.16	48.63	63.24	1
2	23.39	11.25	70.63	12.92	57.78	9.99	48.39	62.95	2
3	22.99	11.37	70.20	12.91	57.41	9.81	48.16	62.66	3
4	22.58	11.49	69.76	12.89	57.03	9.64	47.94	62.36	4
5	22.17	11.61	69.33	12.86	56.66	9.46	47.72	62.07	5
6	21.76	11.73	68.90	12.82	56.30	9.27	47.51	61.77	6
7	21.34	11.84	68.47	12.78	55.94	9.08	47.31	61.46	7
8	20.93	11.94	68.03	12.74	55.58	8.88	47.11	61.15	8
9	20.52	12.03	67.60	12.69	55.22	8.68	46.91	60.84	9
10	20.10	12.12	67.17	12.63	54.87	8.47	46.72	60.53	10
11	19.68	12.21	66.74	12.57	54.53	8.27	46.54	60.23	11
12	19.26	12.30	66.31	12.50	54.19	8.06	46.36	59.91	12
13	18.84	12.38	65.89	12.44	53.85	7.84	46.20	59.59	13
14	18.41	12.45	65.46	12.36	53.52	7.62	46.04	59.27	14
15	17.99	12.52	65.04	12.28	53.19	7.40	45.89	58.95	15
16	17.56	12.58	64.62	12.19	52.87	7.17	45.74	58.63	16
17	17.14	12.64	64.20	12.10	52.55	6.93	45.60	58.30	17
18	16.71	12.69	63.78	12.00	52.23	6.69	45.48	57.97	18
19	16.28	12.74	63.36	11.89	51.92	6.44	45.36	57.64	19
20	15.84	12.79	62.94	11.78	51.62	6.20	45.24	57.31	20
21	15.41	12.83	62.53	11.68	51.32	5.95	45.12	56.98	21
22	14.98	12.87	62.12	11.57	51.03	5.69	45.02	56.65	22
23	14.55	12.90	61.71	11.45	50.75	5.43	44.92	56.32	23
24	14.12	12.92	61.30	11.33	50.47	5.16	44.83	55.99	24
25	13.69	12.94	60.90	11.21	50.19	4.90	44.74	55.65	25
26	13.25	12.95	60.50	11.08	49.91	4.63	44.67	55.31	26
27	12.82	12.96	60.10	10.94	49.64	4.36	44.60	54.97	27
28	12.38	12.96	59.71	10.79	49.38	4.08	44.55	54.63	28
29	11.94	12.95	59.32	10.64	49.12	3.80	44.50	54.29	29
30	11.50	12.94	58.93	10.48	48.87	3.52	44.46	53.95	30
31	11.06	12.93	58.54	10.32	48.63	3.24	44.44	53.62	31
32	10.63	12.92	58.16	10.16	48.39	2.95	44.42	53.29	32

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α ANDROMEDÆ.				γ PEGASI. (*Algenib.*)				β Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h. 0	m. 0	28°	17′	h. 0	m. 5	14°	43′	h. 0	m. 18	78°	3′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	59.40	0.13	70.1	0.9	52.01	0.11	20.7	0.8	12.03	0.90	58.2	1.2
11	59.27	0.12	69.2	1.1	51.90	0.09	19.9	0.9	11.13	0.83	57.0	1.8
21	59.15	0.11	68.1	1.3	51.81	0.09	19.0	1.0	10.30	0.73	55.2	2.4
31	59.04	0.09	66.8	1.5	51.72	0.07	18.0	1.0	9.57	0.62	52.8	2.7
Feb. 10	58.95	0.05	65.3	1.7	51.65	0.04	17.0	0.9	8.95	0.50	50.1	3.3
20	58.90	0.02	63.6	1.6	51.61	0.02	16.1	0.9	8.45	0.37	46.8	3.5
March 2	58.88	0.01	62.0	1.4	51.59	0.01	15.2	0.8	8.08	0.22	43.3	3.8
12	58.89	0.05	60.6	1.3	51.60	0.05	14.4	0.5	7.86	0.04	39.5	3.8
22	58.94	0.09	59.3	1.1	51.65	0.09	13.9	0.1	7.82	0.10	35.7	3.9
April 1	59.03	0.15	58.2	0.8	51.74	0.13	13.8	0.1	7.92	0.26	31.8	3.9
11	59.18	0.19	57.4	0.4	51.87	0.17	13.9	0.3	8.18	0.41	27.9	3.8
21	59.37	0.22	57.0	0.0	52.04	0.21	14.2	0.6	8.59	0.57	24.1	3.6
May 1	59.59	0.28	57.0	0.4	52.25	0.25	14.8	1.0	9.16	0.71	20.5	3.3
11	59.87	0.31	57.4	0.7	52.50	0.28	15.8	1.2	9.87	0.83	17.2	2.9
21	60.18	0.33	58.1	1.0	52.78	0.30	17.0	1.5	10.70	0.94	14.3	2.6
31	60.51	0.34	59.1	1.5	53.08	0.32	18.5	1.8	11.64	1.03	11.7	2.1
June 10	60.85	0.35	60.6	1.8	53.40	0.33	20.3	2.0	12.67	1.09	9.6	1.6
20	61.20	0.35	62.4	2.1	53.73	0.33	22.3	2.1	13.76	1.13	8.0	1.2
30	61.55	0.34	64.5	2.3	54.06	0.33	24.4	2.2	14.89	1.13	6.8	0.6
July 10	61.89	0.33	66.8	2.4	54.39	0.31	26.6	2.2	16.02	1.12	6.2	0.1
20	62.22	0.30	69.2	2.4	54.70	0.29	28.8	2.1	17.14	1.05	6.3	0.7
30	62.52	0.26	71.6	2.5	54.99	0.25	30.9	2.2	18.19	0.97	7.0	1.3
Aug. 9	62.78	0.23	74.1	2.6	55.24	0.22	33.1	2.1	19.16	0.84	8.3	1.7
19	63.01	0.20	76.7	2.6	55.46	0.19	35.3	1.8	20.00	0.70	10.0	2.1
29	63.21	0.14	79.3	2.4	55.65	0.15	37.1	1.7	20.70	0.55	12.1	2.5
Sept. 8	63.35	0.10	81.7	2.3	55.80	0.11	38.8	1.5	21.25	0.35	14.6	2.7
18	63.45	0.08	84.0	2.1	55.91	0.08	40.3	1.2	21.60	0.17	17.3	3.0
28	63.53	0.03	86.1	1.8	55.99	0.03	41.5	1.1	21.77	0.04	20.3	3.0
Oct. 8	63.56	0.01	87.9	1.6	56.02	0.00	42.6	0.9	21.73	0.20	23.3	3.0
18	63.55	0.02	89.5	1.4	56.02	0.02	43.5	0.7	21.53	0.39	26.3	2.8
28	63.53	0.07	90.9	1.2	56.00	0.04	44.2	0.3	21.14	0.57	29.1	2.5
Nov. 7	63.46	0.08	92.1	0.8	55.96	0.07	44.5	0.1	20.57	0.78	31.6	2.0
17	63.38	0.10	92.9	0.4	55.89	0.08	44.6	0.0	19.79	0.82	33.6	1.4
27	63.28	0.12	93.3	0.1	55.81	0.09	44.6	0.2	18.97	0.89	35.0	0.9
Dec. 7	63.16	0.13	93.4	0.2	55.72	0.11	44.4	0.3	18.08	0.94	35.9	0.5
17	63.03	0.13	93.2	0.4	55.61	0.10	44.1	0.7	17.14	0.94	36.4	0.3
27	62.90	0.12	92.8	0.8	55.51	0.11	43.4	0.7	16.20	0.93	36.1	0.9
37	62.78		92.0		55.40		42.7		15.27		35.2	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cassiopeæ.				β Ceti.				θ¹ Ceti.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 0	m. 32	55°	45′	h. 0	m. 36	18°	45′	h. 1	m. 16	8°	54′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	23.90	0.27	25.0	0.5	24.49	0.11	88.2	0.4	52.73	0.11	84.1	0.6
11	23.63	0.27	24.5	1.0	24.38	0.11	88.6	0.1	52.62	0.11	84.7	0.5
21	23.36	0.25	23.5	1.4	24.27	0.11	88.7	0.2	52.51	0.12	85.2	0.3
31	23.11	0.23	22.1	1.8	24.16	0.09	88.5	0.5	52.39	0.11	85.5	0.1
Feb. 10	22.88	0.19	20.3	2.1	24.07	0.07	88.0	0.7	52.28	0.10	85.4	0.2
20	22.69	0.14	18.2	2.3	24.00	0.04	87.3	0.9	52.18	0.08	85.2	0.4
March 2	22.55	0.07	15.9	2.6	23.96	0.02	86.4	1.2	52.10	0.05	84.8	0.5
12	22.48	0.01	13.3	2.5	23.94	0.02	85.2	1.5	52.05	0.02	84.3	0.8
22	22.47	0.06	10.8	2.3	23.96	0.04	83.7	1.7	52.03	0.02	83.5	1.0
April 1	22.53	0.14	8.5	2.1	24.00	0.10	82.0	1.9	52.05	0.05	82.5	1.4
11	22.67	0.22	6.4	1.9	24.10	0.14	80.1	2.2	52.10	0.09	81.1	1.6
21	22.89	0.28	4.5	1.6	24.24	0.18	77.9	2.3	52.19	0.14	79.5	1.8
May 1	23.17	0.35	2.9	1.2	24.42	0.22	75.6	2.3	52.33	0.19	77.7	1.9
11	23.52	0.39	1.7	0.5	24.64	0.26	73.3	2.4	52.52	0.22	75.8	2.0
21	23.91	0.45	1.2	0.1	24.90	0.29	70.9	2.5	52.74	0.25	73.8	2.2
31	24.36	0.47	1.1	0.3	25.19	0.31	68.4	2.4	52.99	0.28	71.6	2.3
June 10	24.83	0.48	1.4	0.9	25.50	0.32	66.0	2.4	53.27	0.30	69.3	2.3
20	25.31	0.49	2.3	1.3	25.82	0.32	63.6	2.1	53.57	0.31	67.0	2.2
30	25.80	0.49	3.6	1.8	26.14	0.33	61.5	1.9	53.88	0.33	64.8	2.1
July 10	26.29	0.46	5.4	2.2	26.47	0.33	59.6	1.6	54.21	0.32	62.7	1.9
20	26.75	0.44	7.6	2.5	26.80	0.31	58.0	1.3	54.53	0.31	60.8	1.7
30	27.19	0.40	10.1	2.8	27.11	0.29	56.7	1.0	54.84	0.30	59.1	1.3
Aug. 9	27.59	0.35	12.9	3.0	27.40	0.25	55.7	0.7	55.14	0.27	57.8	1.1
19	27.94	0.31	15.9	3.2	27.65	0.22	55.0	0.2	55.41	0.24	56.7	0.8
29	28.25	0.24	19.1	3.3	27.87	0.19	54.8	0.1	55.65	0.21	55.9	0.5
Sept. 8	28.49	0.19	22.4	3.3	28.06	0.14	54.9	0.3	55.86	0.18	55.4	0.2
18	28.68	0.14	25.7	3.3	28.20	0.11	55.2	0.7	56.04	0.14	55.2	0.1
28	28.82	0.07	29.0	3.2	28.31	0.06	55.9	0.9	56.18	0.11	55.3	0.3
Oct. 8	28.89	0.01	32.2	3.0	28.37	0.03	56.8	1.1	56.29	0.08	55.6	0.6
18	28.90	0.03	35.2	2.8	28.40	0.01	57.9	1.3	56.37	0.04	56.2	0.8
28	28.87	0.09	38.0	2.6	28.39	0.02	59.2	1.3	56.41	0.01	57.0	1.0
Nov. 7	28.78	0.12	40.6	2.2	28.37	0.06	60.5	1.3	56.42	0.02	58.0	1.0
17	28.66	0.17	42.8	1.8	28.31	0.08	61.8	1.2	56.40	0.04	59.0	1.0
27	28.49	0.20	44.6	1.4	28.23	0.09	63.0	1.0	56.36	0.05	60.0	1.0
Dec. 7	28.29	0.24	46.0	0.8	28.14	0.11	64.0	1.0	56.31	0.08	61.0	0.9
17	28.05	0.25	46.8	0.3	28.03	0.11	65.0	0.8	56.23	0.10	61.9	0.9
27	27.80	0.27	47.1	0.2	27.92	0.12	65.8	0.5	56.13	0.10	62.8	0.7
37	27.53		46.9		27.80		66.3		56.03		63.5	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Eridani. (*Achernar.*)				α Arietis.				γ Ceti.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 1	m. 32	57°	57′	h. 1	m. 59	22°	47′	h. 2	m. 35	2°	37′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	24.23	0.33	66.5	0.2	7.28	0.11	12.4	0.3	54.09	0.09	54.2	0.7
11	23.90	0.32	66.7	0.3	7.17	0.13	12.1	0.4	54.00	0.11	53.5	0.6
21	23.58	0.32	66.4	1.0	7.04	0.13	11.7	0.7	53.89	0.13	52.9	0.5
31	23.26	0.30	65.4	1.4	6.91	0.14	11.0	0.8	53.76	0.14	52.4	0.4
Feb. 10	22.96	0.28	64.0	1.9	6.77	0.13	10.2	0.8	53.62	0.13	52.0	0.2
20	22.68	0.24	62.1	2.3	6.64	0.12	9.4	0.9	53.49	0.12	51.8	0.1
March 2	22.44	0.19	59.8	2.7	6.52	0.10	8.5	0.8	53.37	0.11	51.7	0.1
12	22.25	0.15	57.1	3.1	6.42	0.06	7.7	0.8	53.26	0.09	51.6	0.2
22	22.10	0.07	54.0	3.4	6.36	0.03	6.9	0.8	53.17	0.06	51.8	0.3
April 1	22.03	0.01	50.6	3.6	6.33	0.01	6.1	0.6	53.11	0.02	52.1	0.6
11	22.02	0.04	47.0	3.6	6.34	0.07	5.5	0.3	53.09	0.02	52.7	0.7
21	22.06	0.13	43.4	3.7	6.41	0.12	5.2	0.1	53.11	0.06	53.4	1.0
May 1	22.19	0.19	39.7	3.6	6.53	0.17	5.1	0.1	53.17	0.12	54.4	1.2
11	22.38	0.27	36.1	3.5	6.70	0.21	5.2	0.3	53.29	0.16	55.6	1.4
21	22.65	0.32	32.6	3.3	6.91	0.25	5.5	0.6	53.45	0.19	57.0	1.6
31	22.97	0.37	29.3	3.0	7.16	0.28	6.1	1.0	53.64	0.24	58.6	1.7
June 10	23.34	0.42	26.3	2.7	7.44	0.30	7.1	1.2	53.88	0.26	60.3	1.7
20	23.76	0.46	23.6	2.3	7.74	0.33	8.3	1.4	54.14	0.29	62.0	1.9
30	24.22	0.49	21.3	1.9	8.07	0.34	9.7	1.5	54.43	0.31	63.9	1.9
July 10	24.71	0.49	19.4	1.2	8.41	0.35	11.2	1.7	54.74	0.32	65.8	1.9
20	25.20	0.48	18.2	0.8	8.76	0.34	12.9	1.9	55.06	0.31	67.7	1.7
30	25.68	0.47	17.4	0.1	9.10	0.32	14.8	1.9	55.37	0.31	69.4	1.6
Aug. 9	26.15	0.44	17.3	0.4	9.42	0.31	16.7	1.8	55.68	0.30	71.0	1.4
19	26.59	0.40	17.7	1.0	9.73	0.29	18.5	1.8	55.98	0.28	72.4	1.2
29	26.99	0.34	18.7	1.5	10.02	0.27	20.3	1.8	56.26	0.27	73.6	1.0
Sept. 8	27.33	0.29	20.2	1.9	10.29	0.22	22.1	1.7	56.53	0.24	74.6	0.8
18	27.62	0.21	22.1	2.2	10.51	0.20	23.8	1.6	56.77	0.22	75.4	0.4
28	27.83	0.16	24.3	2.6	10.71	0.17	25.4	1.4	56.99	0.19	75.8	0.2
Oct. 8	27.99	0.08	26.9	2.9	10.88	0.13	26.8	1.2	57.18	0.15	76.0	0.1
18	28.07	0.01	29.8	2.9	11.01	0.10	28.0	1.1	57.33	0.12	75.9	0.3
28	28.08	0.07	32.7	2.8	11.11	0.08	29.1	0.9	57.45	0.10	75.6	0.4
Nov. 7	28.01	0.12	35.5	2.7	11.19	0.03	30.0	0.8	57.55	0.07	75.2	0.5
17	27.89	0.19	38.2	2.5	11.22	0.01	30.8	0.5	57.62	0.04	74.7	0.6
27	27.70	0.22	40.7	2.0	11.23	0.03	31.3	0.3	57.66	0.00	74.1	0.7
Dec. 7	27.48	0.26	42.7	1.7	11.20	0.05	31.6	0.2	57.66	0.01	73.4	0.8
17	27.22	0.29	44.4	1.2	11.15	0.07	31.8	0.1	57.65	0.06	72.6	0.7
27	26.93	0.33	45.6	0.5	11.08	0.10	31.7	0.2	57.59	0.07	71.9	0.7
37	26.60		46.1		10.98		31.5		57.52		71.2	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Ceti.				α Persei.				η Tauri.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. m. 2 54		° ' 3 31		h. m. 3 14		° ' 49 20		h. m. 3 38		° ' 23 39	
	s.	s.	"	"	s.	s.	"	"	s.	s.	"	"
Jan. 1	48.97	0.08	38.1	0.7	8.67	0.16	70.3	1.0	60.10	0.06	44.9	0.1
11	48.89	0.11	37.4	0.6	8.51	0.20	71.3	0.6	60.04	0.10	45.0	0.0
21	48.78	0.12	36.8	0.4	8.31	0.22	71.9	0.3	59.94	0.12	45.0	0.2
31	48.66	0.14	36.4	0.4	8.09	0.23	72.2	0.2	59.82	0.14	44.8	0.3
Feb. 10	48.52	0.14	36.0	0.4	7.86	0.25	72.0	0.5	59.68	0.16	44.5	0.3
20	48.38	0.14	35.6	0.2	7.61	0.24	71.5	0.8	59.52	0.17	44.2	0.4
March 2	48.24	0.12	35.4	0.0	7.37	0.22	70.7	1.1	59.35	0.16	43.8	0.5
12	48.12	0.10	35.4	0.1	7.15	0.19	69.6	1.4	59.19	0.14	43.3	0.6
22	48.02	0.07	35.5	0.3	6.96	0.15	68.2	1.7	59.05	0.11	42.7	0.6
April 1	47.95	0.04	35.8	0.5	6.81	0.10	66.5	1.7	58.94	0.08	42.1	0.6
11	47.91	0.01	36.3	0.7	6.71	0.03	64.8	1.7	58.86	0.03	41.5	0.4
21	47.92	0.04	37.0	0.9	6.68	0.05	63.1	1.7	58.83	0.02	41.1	0.3
May 1	47.96	0.10	37.9	1.1	6.73	0.11	61.4	1.6	58.85	0.06	40.8	0.2
11	48.06	0.14	39.0	1.3	6.84	0.17	59.8	1.4	58.91	0.12	40.6	0.0
21	48.20	0.18	40.3	1.4	7.01	0.24	58.4	1.3	59.03	0.16	40.6	0.2
31	48.38	0.22	41.7	1.6	7.25	0.29	57.1	0.8	59.19	0.20	40.8	0.4
June 10	48.60	0.26	43.3	1.7	7.54	0.35	56.3	0.5	59.39	0.25	41.2	0.6
20	48.86	0.28	45.0	1.8	7.89	0.40	55.8	0.3	59.64	0.28	41.8	0.7
30	49.14	0.30	46.8	1.8	8.29	0.42	55.5	0.1	59.92	0.30	42.5	0.9
July 10	49.44	0.30	48.6	1.8	8.71	0.43	55.6	0.3	60.22	0.32	43.4	1.0
20	49.74	0.32	50.4	1.7	9.14	0.45	55.9	0.8	60.54	0.34	44.4	1.1
30	50.06	0.31	52.1	1.6	9.59	0.46	56.7	1.1	60.88	0.34	45.5	1.1
Aug. 9	50.37	0.31	53.7	1.4	10.05	0.45	57.8	1.4	61.22	0.34	46.6	1.2
19	50.68	0.29	55.1	1.2	10.50	0.43	59.2	1.5	61.56	0.33	47.8	1.3
29	50.97	0.28	56.3	1.0	10.93	0.41	60.7	1.7	61.89	0.32	49.1	1.2
Sept. 8	51.25	0.25	57.3	0.8	11.34	0.38	62.4	1.8	62.21	0.30	50.3	1.1
18	51.50	0.23	58.1	0.4	11.72	0.37	64.2	2.0	62.51	0.29	51.4	1.0
28	51.73	0.20	58.5	0.2	12.09	0.33	66.2	2.2	62.80	0.27	52.4	1.0
Oct. 8	51.93	0.18	58.7	0.1	12.42	0.30	68.4	2.3	63.07	0.23	53.4	0.9
18	52.11	0.15	58.6	0.3	12.72	0.24	70.7	2.2	63.30	0.21	54.3	0.7
28	52.26	0.12	58.3	0.4	12.96	0.20	72.9	2.2	63.51	0.19	55.0	0.7
Nov. 7	52.38	0.08	57.9	0.5	13.16	0.16	75.1	2.1	63.70	0.15	55.7	0.7
17	52.46	0.05	57.4	0.6	13.32	0.10	77.2	2.1	63.85	0.11	56.4	0.4
27	52.51	0.03	56.8	0.7	13.42	0.05	79.3	1.9	63.96	0.08	56.8	0.4
Dec. 7	52.54	0.01	56.1	0.7	13.47	0.01	81.2	1.7	64.04	0.04	57.2	0.3
17	52.53	0.03	55.4	0.8	13.46	0.06	82.9	1.5	64.08	0.00	57.5	0.2
27	52.50	0.07	54.6	0.6	13.40	0.12	84.4	1.2	64.08	0.05	57.7	0.1
37	52.43		54.0		13.28		85.6		64.03		57.8	

NOTE. – Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ^1 Eridani.				α Tauri. (*Aldebaran.*)				α Aurigæ. (*Capella.*)			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 3 m. 51		13° 54′		h. 4 m. 27		16° 13′		h. 5 m. 6		45° 50′	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	22.43	0.06	64.4	1.4	44.05	0.02	14.0	0.2	9.30	0.01	62.7	1.4
11	22.37	0.11	65.8	1.1	44.03	0.06	13.8	0.2	9.29	0.06	64.1	1.2
21	22.26	0.13	66.9	0.8	43.97	0.10	13.6	0.2	9.23	0.12	65.3	1.1
31	22.13	0.14	67.7	0.6	43.87	0.13	13.4	0.2	9.11	0.16	66.4	0.8
Feb. 10	21.99	0.16	68.3	0.3	43.74	0.15	13.2	0.3	8.95	0.20	67.2	0.4
20	21.83	0.18	68.6	0.1	43.59	0.16	12.9	0.2	8.75	0.23	67.6	0.2
March 2	21.65	0.16	68.5	0.3	43.43	0.17	12.7	0.2	8.52	0.24	67.8	0.1
12	21.49	0.15	68.2	0.6	43.26	0.15	12.5	0.2	8.28	0.23	67.7	0.4
22	21.34	0.13	67.6	0.8	43.11	0.14	12.3	0.2	8.05	0.22	67.3	0.7
April 1	21.21	0.09	66.8	1.2	42.97	0.10	12.1	0.1	7.83	0.19	66.6	0.9
11	21.12	0.06	65.6	1.5	42.87	0.07	12.0	0.1	7.64	0.15	65.7	1.2
21	21.06	0.01	64.1	1.7	42.80	0.03	11.9	0.1	7.49	0.09	64.5	1.3
May 1	21.05	0.03	62.4	1.9	42.77	0.02	12.0	0.2	7.40	0.03	63.2	1.3
11	21.08	0.06	60.5	2.0	42.79	0.05	12.2	0.3	7.37	0.03	61.9	1.3
21	21.14	0.12	58.5	2.2	42.84	0.11	12.5	0.4	7.40	0.09	60.6	1.4
31	21.26	0.17	56.3	2.3	42.95	0.16	12.9	0.6	7.49	0.15	59.2	1.3
June 10	21.43	0.19	54.0	2.4	43.11	0.20	13.5	0.7	7.64	0.21	57.9	1.2
20	21.62	0.24	51.6	2.4	43.31	0.23	14.2	0.9	7.85	0.26	56.7	0.9
30	21.86	0.26	49.2	2.3	43.54	0.25	15.1	1.0	8.11	0.30	55.8	0.8
July 10	22.12	0.28	46.9	2.1	43.79	0.29	16.1	1.0	8.41	0.34	55.0	0.6
20	22.40	0.30	44.8	1.9	44.08	0.30	17.1	1.0	8.75	0.37	54.4	0.4
30	22.70	0.31	42.9	1.5	44.38	0.32	18.1	1.0	9.12	0.40	54.0	0.3
Aug. 9	23.01	0.31	41.4	1.3	44.70	0.32	19.1	1.0	9.52	0.42	53.7	0.0
19	23.32	0.30	40.1	1.0	45.02	0.31	20.1	0.9	9.94	0.42	53.7	0.2
29	23.62	0.30	39.1	0.7	45.33	0.32	21.0	0.8	10.36	0.43	53.9	0.4
Sept. 8	23.92	0.28	38.4	0.1	45.65	0.31	21.8	0.7	10.79	0.42	54.3	0.5
18	24.20	0.26	38.3	0.2	45.96	0.29	22.5	0.6	11.21	0.42	54.8	0.6
28	24.46	0.24	38.5	0.6	46.25	0.28	23.1	0.3	11.63	0.41	55.4	0.8
Oct. 8	24.70	0.22	39.1	1.0	46.53	0.27	23.4	0.2	12.04	0.40	56.2	1.0
18	24.92	0.19	40.1	1.3	46.80	0.25	23.6	0.1	12.44	0.37	57.2	1.1
28	25.11	0.16	41.4	1.5	47.05	0.21	23.7	0.0	12.81	0.34	58.3	1.2
Nov. 7	25.27	0.13	42.9	1.7	47.26	0.19	23.7	0.1	13.15	0.31	59.5	1.3
17	25.40	0.10	44.6	1.8	47.45	0.17	23.6	0.1	13.46	0.26	60.8	1.5
27	25.50	0.06	46.4	1.8	47.62	0.12	23.5	0.2	13.72	0.21	62.3	1.5
Dec. 7	25.56	0.03	48.2	1.8	47.74	0.09	23.3	0.2	13.93	0.15	63.8	1.5
17	25.59	0.02	50.0	1.7	47.83	0.04	23.1	0.3	14.08	0.10	65.3	1.5
27	25.57	0.04	51.7	1.5	47.87	0.01	22.8	0.2	14.18	0.05	66.8	1.4
37	25.53		53.2		47.88		22.6		14.23		68.2	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Orionis. (*Rigel.*)				β Tauri.				δ Orionis.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h. 5	m. 7	° 8	′ 21	h. 5	m. 17	° 28	′ 29	h. 5	m. 24	° 0	′ 24
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	41.11	0.01	68.1	1.5	16.51	0.02	5.6	0.5	43.27	0.02	25.1	1.2
11	41.10	0.05	69.6	1.3	16.53	0.03	6.1	0.4	43.25	0.02	26.3	1.0
21	41.05	0.09	70.9	1.0	16.50	0.08	6.5	0.3	43.23	0.05	27.3	0.9
31	40.96	0.12	71.9	0.9	16.42	0.11	6.8	0.3	43.18	0.10	28.2	0.7
Feb. 10	40.84	0.15	72.8	0.6	16.31	0.15	7.1	0.2	43.08	0.13	28.9	0.5
20	40.69	0.16	73.4	0.3	16.16	0.17	7.3	0.0	42.95	0.15	29.4	0.3
March 2	40.53	0.17	73.7	0.1	15.99	0.18	7.3	0.1	42.80	0.17	29.7	0.1
12	40.36	0.17	73.8	0.1	15.81	0.18	7.2	0.2	42.63	0.16	29.8	0.0
22	40.19	0.16	73.7	0.4	15.63	0.17	7.0	0.3	42.47	0.15	29.8	0.2
April 1	40.03	0.14	73.3	0.7	15.46	0.15	6.7	0.4	42.32	0.13	29.6	0.4
11	39.89	0.11	72.6	0.9	15.31	0.11	6.3	0.4	42.19	0.12	29.2	0.6
21	39.78	0.07	71.7	1.1	15.20	0.08	5.9	0.5	42.07	0.09	28.6	0.8
May 1	39.71	0.03	70.6	1.3	15.12	0.03	5.4	0.5	41.98	0.04	27.8	0.9
11	39.68	0.01	69.3	1.6	15.09	0.02	4.9	0.4	41.94	0.01	26.9	1.0
21	39.69	0.05	67.7	1.7	15.11	0.07	4.5	0.4	41.93	0.05	25.9	1.2
31	39.74	0.09	66.0	1.8	15.18	0.12	4.1	0.3	41.98	0.10	24.7	1.4
June 10	39.83	0.13	64.2	1.9	15.30	0.16	3.8	0.1	42.08	0.12	23.3	1.5
20	39.96	0.18	62.3	2.0	15.46	0.21	3.7	0.1	42.20	0.16	21.8	1.5
30	40.14	0.20	60.3	1.9	15.67	0.24	3.6	0.0	42.36	0.20	20.3	1.5
July 10	40.34	0.23	58.4	1.9	15.91	0.27	3.6	0.1	42.56	0.23	18.8	1.5
20	40.57	0.26	56.5	1.8	16.18	0.30	3.7	0.2	42.79	0.25	17.3	1.4
30	40.83	0.28	54.7	1.6	16.48	0.32	3.9	0.3	43.04	0.27	15.9	1.3
Aug. 9	41.11	0.29	53.1	1.3	16.80	0.34	4.2	0.4	43.31	0.28	14.6	1.3
19	41.40	0.29	51.8	1.1	17.14	0.34	4.6	0.4	43.59	0.29	13.3	0.9
29	41.69	0.30	50.7	0.7	17.48	0.33	5.0	0.4	43.88	0.30	12.4	0.5
Sept. 8	41.99	0.30	50.0	0.3	17.81	0.34	5.4	0.3	44.18	0.30	11.9	0.3
18	42.29	0.30	49.7	0.1	18.15	0.34	5.7	0.4	44.48	0.29	11.6	0.1
28	42.59	0.28	49.8	0.3	18.49	0.34	6.1	0.4	44.77	0.29	11.5	0.3
Oct. 8	42.87	0.26	50.1	0.8	18.83	0.33	6.5	0.5	45.06	0.28	11.8	0.5
18	43.13	0.25	50.9	1.1	19.16	0.31	6.8	0.4	45.34	0.27	12.3	0.8
28	43.38	0.23	52.0	1.3	19.47	0.29	7.2	0.3	45.61	0.25	13.1	1.1
Nov. 7	43.61	0.20	53.3	1.6	19.76	0.25	7.5	0.4	45.86	0.22	14.2	1.2
17	43.81	0.18	54.9	1.7	20.01	0.23	7.9	0.3	46.08	0.19	15.4	1.4
27	43.99	0.14	56.6	1.8	20.24	0.20	8.2	0.4	46.27	0.16	16.8	1.4
Dec. 7	44.13	0.11	58.4	1.8	20.44	0.15	8.6	0.4	46.43	0.13	18.2	1.4
17	44.24	0.06	60.2	1.7	20.59	0.09	9.0	0.4	46.56	0.09	19.6	1.3
27	44.30	0.01	61.9	1.6	20.68	0.06	9.4	0.4	46.65	0.05	20.9	1.3
37	44.31		63.5		20.74		9.8		46.70		22.2	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	*α* Leporis.				*ι* Orionis.				*α* Columbæ.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 5	m. 26	17°	55′	h. 5	m. 28	1°	17′	h. 5	m. 34	34°	8′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	26.71	0.00	35.5	2.0	58.62	0.03	42.5	1.2	29.89	0.03	66.0	2.6
11	26.71	0.05	37.5	1.8	58.65	0.03	43.7	1.1	29.86	0.08	68.6	2.4
21	26.66	0.09	39.3	1.5	58.62	0.07	44.8	0.9	29.78	0.12	71.0	2.0
31	26.57	0.13	40.8	1.2	58.55	0.10	45.7	0.7	29.66	0.17	73.0	1.6
Feb. 10	26.44	0.15	42.0	0.9	58.45	0.14	46.4	0.6	29.49	0.20	74.6	1.2
20	26.29	0.17	42.9	0.5	58.31	0.15	47.0	0.4	29.29	0.22	75.8	0.7
March 2	26.12	0.19	43.4	0.2	58.16	0.17	47.4	0.1	29.07	0.22	76.5	0.3
12	25.93	0.19	43.6	0.2	57.99	0.17	47.5	0.1	28.85	0.24	76.8	0.2
22	25.74	0.17	43.4	0.4	57.82	0.16	47.4	0.2	28.61	0.23	76.6	0.6
April 1	25.57	0.16	43.0	0.8	57.66	0.14	47.2	0.4	28.38	0.21	76.0	1.1
11	25.41	0.14	42.2	1.1	57.52	0.11	46.8	0.6	28.17	0.19	74.9	1.4
21	25.27	0.11	41.1	1 4	57.41	0.08	46.2	0.8	27.98	0.14	73.5	1.7
May 1	25.16	0.06	39.7	1.6	57.33	0.05	45.4	1.0	27.84	0.11	71.8	2.1
11	25.10	0.03	38.1	1.9	57.28	0.00	44.4	1.1	27.73	0.06	69.7	2.4
21	25.07	0.04	36.2	2.1	57.28	0.04	43.3	1.2	27.67	0.01	67.3	2.6
31	25.11	0.07	34.1	2.3	57.32	0.08	42.1	1.3	27.66	0.04	64.7	2.9
June 10	25.18	0.10	31.8	2.5	57.40	0.12	40.8	1.5	27.70	0.09	61.8	3.0
20	25.28	0.15	29.3	2.4	57.52	0.16	39.3	1.6	27.79	0.13	58.8	2.9
30	25.43	0.19	26.9	2.2	57.68	0.20	37.7	1.6	27.92	0.17	55.9	2.8
July 10	25.62	0.22	24.7	2.1	57.88	0.22	36.1	1.5	28.09	0.21	53.1	2.8
20	25.84	0.24	22.6	2.0	58.10	0.24	34.6	1.4	28.30	0.24	50.3	2.6
30	26.08	0.26	20.6	1.9	58.34	0.27	33.2	1.4	28.54	0.27	47.7	2.2
Aug. 9	26.34	0.28	18.7	1.5	58.61	0.28	31.8	1.2	28.81	0.30	45.5	1.8
19	26.62	0.29	17.2	1.2	58.89	0.29	30.6	0.9	29.11	0.31	43.7	1.4
29	26.91	0.30	16.0	0.7	59.18	0.30	29.7	0.6	29.42	0.32	42.3	0.9
Sept. 8	27.21	0.30	15.3	0.4	59.48	0.30	29.1	0.3	29.74	0.33	41.4	0.3
18	27.51	0.30	14.9	0.2	59.78	0.29	28.8	0.0	30.07	0.33	41.1	0.2
28	27.81	0.29	15.1	0.5	60.07	0.29	28.8	0.3	30.40	0.32	41.3	0.7
Oct. 8	28.10	0.29	15.6	1.0	60.36	0.28	29.1	0.6	30.72	0.30	42.0	1.2
18	28.39	0.26	16.6	1.3	60.64	0.27	29.7	0.8	31.02	0.29	43.2	1.6
28	28.65	0.24	17.9	1.8	60.91	0.25	30.5	1.1	31.31	0.26	44.8	2.1
Nov. 7	28.89	0.22	19.7	2.0	61.16	0.23	31.6	1.3	31.57	0.23	46.9	2.8
17	29.11	0.19	21.7	2.2	61.39	0.20	32.9	1.4	31.80	0.20	49.7	3.0
27	29.30	0.15	23.9	2.3	61.59	0.17	34.3	1.5	32.00	0.15	52.7	3.0
Dec. 7	29.45	0.11	26.2	2.4	61.76	0.13	35.8	1.4	32.15	0.10	55.7	3.0
17	29.56	0.07	28.6	2.3	61.89	0.08	37.2	1.4	32.25	0.05	58.7	3.0
27	29.63	0.03	30.9	2.1	61.97	0.03	38.6	1.3	32.30	0.01	61.7	2.7
37	29.66		33.0		62.00		39.9		32.31		64.4	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Orionis.				μ Geminorum.				α Argus. (*Canopus.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h. 5	m. 47	° 7	′ 22	h. 6	m. 14	° 22	′ 35	h. 6	m. 20	° 52	′ 36
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	27.01	0.04	42.5	0.8	19.83	0.08	5.2	0.0	48.88	0.03	62.4	3.4
11	27.05	0.00	41.7	0.7	19.91	0.02	5.2	0.1	48.85	0.11	65.8	3.1
21	27.05	0.05	41.0	0.6	19.93	0.02	5.3	0.2	48.74	0.17	68.9	2.8
31	27.00	0.09	40.4	0.5	19.91	0.07	5.5	0.2	48.57	0.23	71.7	2.4
Feb. 10	26.91	0.12	39.9	0.3	19.84	0.11	5.7	0.2	48.34	0.28	74.1	2.0
20	26.79	0.15	39.6	0.2	19.73	0.14	5.9	0.2	48.06	0.32	76.1	1.5
March 2	26.64	0.16	39.4	0.2	19.59	0.17	6.1	0.1	47.74	0.33	77.6	0.9
12	26.48	0.17	39.2	0.0	19.42	0.18	6.2	0.1	47.41	0.36	78.5	0.3
22	26.31	0.16	39.2	0.1	19.24	0.17	6.3	0.0	47.05	0.35	78.8	0.0
April 1	26.15	0.15	39.3	0.2	19.07	0.16	6.3	0.0	46.70	0.34	78.8	0.7
11	26.00	0.12	39.5	0.3	18.91	0.14	6.3	0.1	46.36	0.32	78.1	1.1
21	25.88	0.08	39.8	0.4	18.77	0.11	6.2	0.1	46.04	0.29	77.0	1.5
May 1	25.80	0.05	40.2	0.5	18.66	0.07	6.1	0.2	45.75	0.25	75.5	2.0
11	25.75	0.02	40.7	0.7	18.59	0.04	5.9	0.1	45.50	0.19	73.5	2.4
21	25.73	0.04	41.4	0.8	18.55	0.03	5.8	0.0	45.31	0.12	71.1	2.7
31	25.77	0.07	42.2	0.9	18.58	0.05	5.8	0.1	45.19	0.08	68.4	3.0
June 10	25.84	0.11	43.1	0.9	18.63	0.10	5.7	0.0	45.11	0.01	65.4	3.1
20	25.95	0.15	44.0	1.0	18.73	0.15	5.7	0.1	45.10	0.04	62.3	3.3
30	26.10	0.19	45.0	1.1	18.88	0.18	5.6	0.1	45.14	0.10	59.0	3.4
July 10	26.29	0.22	46.1	1.0	19.06	0.21	5.7	0.1	45.24	0.17	55.6	3.3
20	26.51	0.24	47.1	1.0	19.27	0.24	5.8	0.1	45.41	0.22	52.3	2.9
30	26.75	0.25	48.1	0.9	19.51	0.27	5.9	0.2	45.63	0.27	49.4	2.6
Aug. 9	27.00	0.28	49.0	0.8	19.78	0.29	6.1	0.1	45.90	0.31	46.8	2.3
19	27.28	0.30	49.8	0.7	20.07	0.30	6.2	0.0	46.21	0.35	44.5	1.9
29	27.58	0.30	50.5	0.5	20.37	0.32	6.2	0.0	46.56	0.37	42.6	1.4
Sept. 8	27.88	0.30	51.0	0.2	20.69	0.33	6.2	0.1	46.93	0.40	41.2	0.8
18	28.18	0.30	51.2	0.0	21.02	0.32	6.1	0.1	47.33	0.41	40.4	0.2
28	28.48	0.30	51.2	0.2	21.34	0.33	6.0	0.2	47.74	0.41	40.2	0.6
Oct. 8	28.78	0.30	51.0	0.4	21.67	0.33	5.8	0.2	48.15	0.41	40.8	1.2
18	29.08	0.29	50.6	0.6	22.00	0.32	5.6	0.3	48.56	0.38	42.0	1.7
28	29.37	0.27	50.0	0.8	22.32	0.31	5.3	0.3	48.94	0.36	43.7	2.1
Nov. 7	29.64	0.25	49.2	0.9	22.63	0.30	5.0	0.4	49.30	0.32	45.8	2.7
17	29.89	0.22	48.3	1.0	22.93	0.27	4.6	0.3	49.62	0.28	48.5	3.1
27	30.11	0.19	47.3	1.0	23.20	0.24	4.3	0.3	49.90	0.21	51.6	3.4
Dec. 7	30.30	0.17	46.3	1.0	23.44	0.20	4.0	0.2	50.11	0.15	55.0	3.6
17	30.47	0.11	45.3	1.0	23.64	0.15	3.8	0.1	50.26	0.08	58.6	3.6
27	30.58	0.06	44.3	0.9	23.79	0.12	3.7	0.0	50.34	0.02	62.2	3.5
37	30.64		43.4		23.91		3.7		50.36		65.7	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	51 (Hev.) Cephei.				α Canis Majoris. (*Sirius.*)				ε Canis Majoris.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 6	m. 31	° 87	′ 14	h. 6	m. 38	° 16	′ 31	h. 6	m. 52	° 28	′ 46
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	94.92	0.36	71.8	3.2	51.94	0.07	16.8	2.3	61.74	0.06	42.5	2.9
11	95.28	0.56	75.0	3.1	52.01	0.01	19.1	2.1	61.80	0.02	45.4	2.7
21	94.72	1.44	78.1	3.0	52.02	0.03	21.2	1.9	61.82	0.04	48.1	2.4
31	93.28	2.25	81.1	2.7	51.99	0.07	23.1	1.6	61.78	0.09	50.5	2.1
Feb. 10	91.03	2.93	83.8	2.2	51.92	0.12	24.7	1.3	61.69	0.13	52.6	1.8
20	88.10	3.52	86.0	1.8	51.80	0.15	26.0	1.0	61.56	0.17	54.4	1.4
March 2	84.58	3.90	87.8	1.2	51.65	0.16	27.0	0.7	61.39	0.19	55.8	1.0
12	80.68	4.19	89.0	0.6	51.49	0.18	27.7	0.3	61.20	0.21	56.8	0.6
22	76.49	4.19	89.6	0.0	51.31	0.19	28.0	0.1	60.99	0.21	57.4	0.2
April 1	72.30	4.09	89.6	0.7	51.12	0.18	28.1	0.3	60.78	0.21	57.6	0.2
11	68.21	3.80	88.9	1.2	50.94	0.16	27.8	0.6	60.57	0.19	57.4	0.7
21	64.41	3.33	87.7	1.7	50.78	0.14	27.2	0.9	60.38	0.17	56.7	1.1
May 1	61.08	2.81	86.0	2.1	50.64	0.12	26.3	1.2	60.21	0.15	55.6	1.4
11	58.27	2.20	83.9	2.5	50.52	0.08	25.1	1.5	60.06	0.11	54.2	1.6
21	56.07	1.45	81.4	2.8	50.44	0.02	23.6	1.6	59.95	0.06	52.6	1.9
31	54.62	0.62	78.6	3.0	50.42	0.01	22.0	1.7	59.89	0.03	50.7	2.2
June 10	54.00	0.10	75.6	3.1	50.43	0.04	20.3	1.9	59.86	0.03	48.5	2.4
20	54.10	0.89	72.5	3.1	50.47	0.08	18.4	2.1	59.89	0.05	46.1	2.5
30	54.99	1.67	69.4	3.1	50.55	0.11	16.3	2.1	59.94	0.09	43.6	2.6
July 10	56.66	2.39	66.3	2.9	50.66	0.16	14.2	2.0	60.03	0.12	41.0	2.5
20	59.05	3.07	63.4	2.7	50.82	0.18	12.2	1.9	60.15	0.17	38.5	2.4
30	62.12	3.64	60.7	2.5	51.00	0.21	10.3	1.8	60.32	0.20	36.1	2.3
Aug. 9	65.76	4.21	58.2	2.1	51.21	0.23	8.5	1.5	60.52	0.23	33.8	2.0
19	69.97	4.64	56.1	1.8	51.44	0.26	7.0	1.2	60.75	0.25	31.8	1.6
29	74.61	5.02	54.3	1.4	51.70	0.27	5.8	0.9	61.00	0.28	30.2	1.2
Sept. 8	79.63	5.29	52.9	1.1	51.97	0.28	4.9	0.5	61.28	0.30	29.0	0.8
18	84.92	5.48	51.8	0.5	52.25	0.28	4.4	0.0	61.58	0.31	28.2	0.3
28	90.40	5.49	51.3	0.4	52.54	0.31	4.4	0.4	61.89	0.32	27.9	0.3
Oct. 8	95.89	5.47	50.9	0.7	52.85	0.32	4.8	0.9	62.21	0.32	28.2	0.8
18	101.36	5.32	51.6	1.0	53.17	0.30	5.7	1.2	62.53	0.32	29.0	1.4
28	106.68	5.04	52.6	1.4	53.47	0.29	6.9	1.7	62.85	0.31	30.4	1.8
Nov. 7	111.72	4.59	54.0	1.8	53.76	0.27	8.6	2.0	63.16	0.29	32.2	2.1
17	116.31	4.07	55.8	2.2	54.03	0.24	10.6	2.1	63.45	0.27	34.3	2.5
27	120.38	3.42	58.0	2.6	54.27	0.22	12.7	2.4	63.72	0.23	36.8	2.8
Dec. 7	123.80	2.65	60.6	2.8	54.49	0.19	15.1	2.5	63.95	0.19	39.6	3.0
17	126.45	1.82	63.4	3.1	54.68	0.15	17.6	2.5	64.14	0.16	42.6	3.1
27	128.27	0.95	66.5	3.2	54.83	0.09	20.1	2.5	64.30	0.09	45.7	2.9
37	129.22		69.7		54.92		22.6		64.39		48.6	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Geminorum.				α² Geminorum. (*Castor.*)				α Canis Minoris. (*Procyon.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. m. 7 11		22° 14′		h. m. 7 25		32° 11′		h. m. 7 31		5° 35′	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	36.15	0.14	35.4	0.2	29.73	0.16	56.4	0.4	50.00	0.14	24.4	1.2
11	36.29	0.08	35.2	0.0	29.89	0.11	56.8	0.6	50.14	0.09	23.2	1.1
21	36.37	0.03	35.2	0.1	30.00	0.05	57.4	0.7	50.23	0.04	22.1	1.0
31	36.40	0.02	35.3	0.3	30.05	0.01	58.1	0.8	50.27	0.01	21.1	0.8
Feb. 10	36.38	0.07	35.6	0.3	30.04	0.07	58.9	0.8	50.26	0.05	20.3	0.5
20	36.31	0.11	35.9	0.3	29.97	0.11	59.7	0.7	50.21	0.09	19.8	0.3
March 2	36.20	0.14	36.2	0.4	29.86	0.15	60.4	0.7	50.12	0.13	19.5	0.3
12	36.06	0.16	36.6	0.3	29.71	0.17	61.1	0.6	49.99	0.15	19.2	0.1
22	35.90	0.17	36.9	0.2	29.54	0.18	61.7	0.4	49.84	0.16	19.1	0.1
April 1	35.73	0.16	37.1	0.2	29,36	0.18	62.1	0.3	49.68	0.15	19.2	0.2
11	35.57	0.16	37.3	0.1	29.18	0.18	62.4	0.1	49.53	0.15	19.4	0.3
21	35.41	0.13	37.4	0.1	29.00	0.15	62.5	0.1	49.38	0.14	19.7	0.3
May 1	35.28	0.10	37.5	0.0	28.85	0.13	62.4	0.2	49.24	0.11	20.0	0.4
11	35.18	0.07	37.5	0.0	28.72	0.10	62.2	0.4	49.13	0.09	20.4	0.5
21	35.11	0.04	37.5	0.1	28.62	0.04	61.8	0.5	49.04	0.04	20.9	0.6
31	35.07	0.01	37.4	0.1	28.58	0.01	61.3	0.6	49.00	0.01	21.5	0.6
June 10	35.08	0.04	37.3	0.1	28.57	0.04	60.7	0.6	48.99	0.02	22.1	0.7
20	35.12	0.09	37.2	0.1	28.61	0.08	60.1	0.7	49.01	0.06	22.8	0.9
30	35.21	0.12	37.1	0.1	28.69	0.11	59.4	0.7	49.07	0.09	23.7	0.8
July 10	35.33	0.16	37.0	0.1	28.80	0.16	58.7	0.8	49.16	0.11	24.5	0.7
20	35.49	0.19	36.9	0.2	28.96	0.19	57.9	0.8	49.27	0.15	25.2	0.7
30	35.68	0.22	36.7	0.2	29.15	0.22	57.1	0.8	49.42	0.18	25.9	0.6
Aug. 9	35.90	0.24	36.5	0.2	29.37	0.25	56.3	0.8	49.60	0.21	26.5	0.5
19	36.14	0.26	36.3	0.3	29.62	0.28	55.5	0.9	49.81	0.22	27.0	0.3
29	36.40	0.29	36.0	0.4	29.90	0.30	54.6	0.9	50.03	0.24	27.3	0.0
Sept. 8	36.69	0.31	35.6	0.5	30.20	0.33	53.7	0.8	50.27	0.27	27.3	0.1
18	37.00	0.32	35.1	0.6	30.53	0.34	52.9	0.8	50.54	0.29	27.2	0.4
28	37.32	0.32	34.5	0.6	30.87	0.35	52.1	0.8	50.83	0.30	26.8	0.6
Oct. 8	37.64	0.33	33.9	0.7	31.22	0.36	51.3	0.8	51.13	0.31	26.2	0.7
18	37.97	0.35	33.2	0.7	31.58	0.37	50.5	0.7	51.44	0.32	25.5	1.0
28	38.32	0.33	32.5	0.8	31.95	0.38	49.8	0.7	51.76	0.31	24.5	1.3
Nov. 7	38.65	0.32	31.7	0.8	32.33	0.36	49.1	0.6	52.07	0.30	23.2	1.5
17	38.97	0.31	30.9	0.7	32.69	0.34	48.5	0.3	52.37	0.29	21.7	1.5
27	39.28	0.29	30.2	0.6	33.03	0.32	48.2	0.2	52.66	0.27	20.2	1.6
Dec. 7	39.57	0.27	29.6	0.5	33.35	0.29	48.0	0.1	52.93	0.25	18.6	1.5
17	39.84	0.21	29.1	0.4	33.64	0.25	47.9	0.2	53.18	0.22	17.1	1.5
27	40.05	0.16	28.7	0.2	33.89	0.19	48.1	0.3	53.40	0.16	15.6	1.3
37	40.21		28.5		34.08		48.4		53.56		14.3	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Geminorum. (*Pollux.*)				15 Argus.				ε Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 7	m. 36	28°	21′	h. 8	m. 1	23°	53′	h. 8	m. 39	6°	56′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	35.03	0.17	67.8	0.1	28.41	0.15	31.8	2.8	13.14	0.20	30.9	1.4
11	35.20	0.11	67.9	0.3	28.56	0.10	34.6	2.8	13.34	0.16	29.5	1.2
21	35.31	0.06	68.2	0.5	28.66	0.04	37.4	2.6	13.50	0.11	28.3	1.0
31	35.37	0.00	68.7	0.6	28.70	0.01	40.0	2.4	13.61	0.06	27.3	0.8
Feb. 10	35.37	0.05	69.3	0.6	28.69	0.06	42.4	2.0	13.67	0.00	26.5	0.5
20	35.32	0.10	69.9	0.7	28.63	0.10	44.4	1.7	13.67	0.04	26.0	0.4
March 2	35.22	0.14	70.6	0.6	28.53	0.14	46.1	1.4	13.63	0.07	25.6	0.2
12	35.08	0.16	71.2	0.5	28.39	0.16	47.5	1.0	13.56	0.10	25.4	0.0
22	34.92	0.17	71.7	0.4	28.23	0.18	48.5	0.6	13.46	0.13	25.4	0.1
April 1	34.75	0.18	72.1	0.3	28.05	0.18	49.1	0.3	13.33	0.14	25.5	0.2
11	34.57	0.17	72.4	0.2	27.87	0.18	49.4	0.1	13.19	0.14	25.7	0.3
21	34.40	0.15	72.6	0.1	27.69	0.18	49.5	0.5	13.05	0.14	26.0	0.4
May 1	34.25	0.12	72.7	0.1	27.51	0.15	49.0	0.8	12.91	0.13	26.4	0.4
11	34.13	0.09	72.6	0.2	27.36	0.13	48.2	1.1	12.78	0.11	26.8	0.4
21	34.04	0.06	72.4	0.3	27.23	0.10	47.1	1.3	12.67	0.08	27.2	0.5
31	33.98	0.02	72.1	0.3	27.13	0.07	45.8	1.6	12.59	0.05	27.7	0.6
June 10	33.96	0.03	71.8	0.5	27.06	0.03	44.2	1.8	12.54	0.03	28.3	0.6
20	33.99	0.06	71.3	0.5	27.03	0.00	42.4	2.0	12.51	0.00	28.9	0.5
30	34.05	0.10	70.8	0.5	27.03	0.03	40.4	2.0	12.51	0.03	29.4	0.6
July 10	34.15	0.14	70.3	0.6	27.06	0.07	38.4	2.1	12.54	0.07	30.0	0.5
20	34.29	0.17	69.7	0.6	27.13	0.10	36.3	2.3	12.61	0.08	30.5	0.4
30	34.46	0.20	69.1	0.7	27.23	0.13	34.0	2.1	12.69	0.12	30.9	0.3
Aug. 9	34.66	0.23	68.4	0.7	27.36	0.17	31.9	1.9	12.81	0.15	31.2	0.2
19	34.89	0.26	67.7	0.7	27.53	0.20	30.0	1.6	12.96	0.17	31.4	0.1
29	35.15	0.28	67.0	0.8	27.73	0.22	28.4	1.3	13.13	0.20	31.5	0.2
Sept. 8	35.43	0.30	66.2	0.9	27.95	0.25	27.1	0.9	13.33	0.23	31.3	0.3
18	35.73	0.33	65.3	0.8	28.20	0.28	26.2	0.5	13.56	0.25	31.0	0.6
28	36.06	0.34	64.5	0.9	28.48	0.30	25.7	0.1	13.81	0.27	30.4	0.8
Oct. 8	36.40	0.35	63.6	0.8	28.78	0.32	25.8	0.5	14.08	0.30	29.6	0.9
18	36.75	0.35	62.8	0.9	29.10	0.31	26.3	1.0	14.38	0.31	28.7	1.2
28	37.10	0.35	61.9	0.9	29.41	0.33	27.3	1.5	14.69	0.32	27.5	1.5
Nov. 7	37.45	0.35	61.0	0.8	29.74	0.32	28.8	1.9	15.01	0.32	26.0	1.7
17	37.80	0.34	60.2	0.6	30.06	0.31	30.7	2.3	15.33	0.33	24.3	1.7
27	38.14	0.32	59.6	0.5	30.37	0.29	33.0	2.5	15.66	0.31	22.6	1.7
Dec. 7	38.46	0.29	59.1	0.3	30.66	0.26	35.5	2.7	15.97	0.30	20.9	1.7
17	38.75	0.25	58.8	0.2	30.92	0.22	38.2	2.8	16.27	0.26	19.2	1.7
27	39.00	0.20	58.6	0.1	31.14	0.19	41.0	3.0	16.53	0.24	17.5	1.5
37	39.20		58.7		31.33		44.0		16.77		16.0	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ι Ursæ Majoris.				ι Argus.				α Hydræ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 8	m. 49	48°	35′	h. 9	m. 13	58°	40′	h. 9	m. 20	8°	2′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	′
Jan. 1	25.75	0.31	57.0	0.9	17.02	0.26	17.0	3.7	34.41	0.23	20.9	2.2
11	26.06	0.23	57.9	1.3	17.28	0.19	20.7	3.9	34.64	0.19	23.1	2.2
21	26.29	0.16	59.2	1.5	17.47	0.11	24.6	3.8	34.83	0.14	25.3	2.0
31	26.45	0.09	60.7	1.7	17.58	0.02	28.4	3.7	34.97	0.09	27.3	1.8
Feb. 10	26.54	0.02	62.4	1.7	17.60	0.06	32.1	3.7	35.06	0.04	29.1	1.5
20	26.56	0.05	64.1	1.8	17.54	0.14	35.8	3.4	35.10	0.01	30.6	1.3
March 2	26.51	0.12	65.9	1.9	17.40	0.20	39.2	3.0	35.09	0.05	31.9	1.0
12	26.39	0.16	67.8	1.6	17.20	0.25	42.2	2.7	35.04	0.08	32.9	0.8
22	26.23	0.20	69.4	1.2	16.95	0.30	44.9	2.2	34.96	0.11	33.7	0.5
April 1	26.03	0.22	70.6	0.9	16.65	0.33	47.1	1.8	34.85	0.13	34.2	0.3
11	25.81	0.23	71.5	0.7	16.32	0.35	48.9	1.3	34.72	0.13	34.5	0.0
21	25.58	0.23	72.2	0.4	15.97	0.36	50.2	0.8	34.59	0.13	34.5	0.2
May 1	25.35	0.21	72.6	0.0	15.61	0.36	51.0	0.3	34.46	0.13	34.3	0.3
11	25.14	0.20	72.6	0.3	15.25	0.35	51.3	0.3	34.33	0.12	34.0	0.5
21	24.94	0.16	72.3	0.6	14.90	0.32	51.0	0.7	34.21	0.10	33.5	0.7
31	24.78	0.12	71.7	1.0	14.58	0.29	50.3	1.3	34.11	0.08	32.8	0.9
June 10	24.66	0.08	70.7	1.2	14.29	0.26	49.0	1.7	34.03	0.06	31.9	1.0
20	24.58	0.02	69.5	1.4	14.03	0.22	47.3	2.2	33.97	0.04	30.9	1.0
30	24.56	0.01	68.1	1.6	13.81	0.17	45.1	2.4	33.93	0.01	29.9	1.1
July 10	24.57	0.06	66.5	1.9	13.64	0.12	42.7	2.5	33.92	0.02	28.8	1.2
20	24.63	0.10	64.6	2.0	13.52	0.05	40.2	2.8	33.94	0.04	27.6	1.2
30	24.73	0.15	62.6	2.1	13.47	0.01	37.4	3.0	33.98	0.07	26.4	1.1
Aug. 9	24.88	0.19	60.5	2.1	13.48	0.08	34.4	3.0	34.05	0.09	25.3	1.0
19	25.07	0.23	58.4	2.1	13.56	0.14	31.4	2.8	34.14	0.13	24.3	0.8
29	25.30	0.28	56.3	2.2	13.70	0.20	28.6	2.5	34.27	0.15	23.5	0.5
Sept. 8	25.58	0.32	54.1	2.1	13.90	0.27	26.1	2.3	34.42	0.19	23.0	0.3
18	25.90	0.35	52.0	2.1	14.17	0.33	23.8	2.0	34.61	0.22	22.7	0.0
28	26.25	0.38	49.9	2.0	14.50	0.40	21.8	1.3	34.83	0.24	22.7	0.3
Oct. 8	26.63	0.42	47.9	1.8	14.90	0.44	20.5	0.7	35.07	0.27	23.0	0.6
18	27.05	0.44	46.1	1.6	15.34	0.47	19.8	0.2	35.34	0.30	23.6	1.1
28	27.49	0.45	44.5	1.3	15.81	0.50	19.6	0.5	35.64	0.31	24.7	1.4
Nov. 7	27.94	0.46	43.2	1.1	16.31	0.50	20.1	1.1	35.95	0.33	26.1	1.7
17	28.40	0.47	42.1	0.7	16.81	0.50	21.2	1.8	36.28	0.33	27.8	2.0
27	28.87	0.45	41.4	0.4	17.31	0.47	23.0	2.3	36.61	0.32	29.8	2.1
Dec. 7	29.32	0.42	41.0	0.0	17.78	0.43	25.3	2.9	36.93	0.31	31.9	2.2
17	29.74	0.39	41.0	0.4	18.21	0.37	28.2	3.2	37.24	0.28	34.1	2.4
27	30.13	0.33	41.4	0.6	18.58	0.33	31.4	3.6	37.52	0.26	36.5	2.3
37	30.46		42.0		18.91		35.0		37.78		38.8	

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ϑ Ursæ Majoris.				ε Leonis.				α Leonis.. (*Regulus.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 9	m. 23	52°	19′	h. 9	m. 37	24°	25′	h. 10	m. 0	12°	39′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	18.12	0.36	28.8	0.8	44.77	0.27	48.4	0.7	45.98	0.28	52.1	1.4
11	18.48	0.29	29.6	1.2	45.04	0.24	47.7	0.3	46.26	0.24	50.7	1.7
21	18.77	0.23	30.8	1.6	45.28	0.18	47.4	0.1	46.50	0.19	49.6	0.8
31	19.00	0.14	32.4	1.8	45.46	0.13	47.3	0.2	46.69	0.14	48.8	0.7
Feb. 10	19.14	0.06	34.2	2.0	45.59	0.08	47.5	0.3	46.83	0.09	48.1	0.5
20	19.20	0.01	36.2	2.0	45.67	0.01	47.8	0.6	46.92	0.05	47.6	0.1
March 2	19.19	0.08	38.2	2.0	45.68	0.02	48.4	0.8	46.97	0.01	47.5	0.1
12	19.11	0.15	40.2	1.9	45.66	0.07	49.2	0.9	46.96	0.04	47.6	0.3
22	18.96	0.19	42.1	1.6	45.59	0.10	50.1	0.8	46.92	0.07	47.9	0.4
April 1	18.77	0.22	43.7	1.4	45.49	0.12	50.9	0.8	46.85	0.10	48.3	0.5
11	18.55	0.24	45.1	1.1	45.37	0.13	51.7	0.8	46.75	0.11	48.8	0.5
21	18.31	0.24	46.2	0.7	45.24	0.14	52.5	0.7	46.64	0.12	49.3	0.6
May 1	18.07	0.25	46.9	0.3	45.10	0.14	53.2	0.5	46.52	0.12	49.9	0.5
11	17.82	0.24	47.2	0.1	44.96	0.13	53.7	0.4	46.40	0.12	50.4	0.5
21	17.58	0.21	47.1	0.5	44.83	0.11	54.1	0.3	46.28	0.10	50.9	0.5
31	17.37	0.16	46.6	0.8	44.72	0.09	54.4	0.2	46.18	0.09	51.4	0.4
June 10	17.21	0.12	45.8	1.2	44.63	0.07	54.6	0.1	46.09	0.07	51.8	0.4
20	17.09	0.09	44.6	1.4	44.56	0.04	54.5	0.2	46.02	0.05	52.2	0.3
30	17.00	0.04	43.2	1.7	44.52	0.02	54.3	0.4	45.97	0.03	52.5	0.2
July 10	16.96	0.00	41.5	2.0	44.50	0.02	53.9	0.6	45.94	0.01	52.7	0.0
20	16.96	0.06	39.5	2.2	44.52	0.04	53.3	0.7	45.93	0.02	52.7	0.1
30	17.02	0.10	37.3	2.4	44.56	0.07	52.6	0.8	45.95	0.04	52.6	0.2
Aug. 9	17.12	0.14	34.9	2.5	44.63	0.10	51.8	1.0	45.99	0.07	52.4	0.3
19	17.26	0.19	32.4	2.6	44.73	0.13	50.8	1.1	46.06	0.09	52.1	0.4
29	17.45	0.24	29.8	2.5	44.86	0.16	49.7	1.2	46.15	0.13	51.7	0.6
Sept. 8	17.69	0.29	27.3	2.5	45.02	0.20	48.5	1.4	46.28	0.16	51.1	0.9
18	17.98	0.33	24.8	2.4	45.22	0.23	47.1	1.5	46.44	0.19	50.2	1.0
28	18.31	0.37	22.4	2.4	45.45	0.25	45.6	1.7	46.63	0.22	49.2	1.2
Oct. 8	18.68	0.41	20.0	2.3	45.70	0.28	43.9	1.8	46.85	0.25	48.0	1.5
18	19.09	0.44	17.7	2.0	45.98	0.31	42.1	1.8	47.10	0.28	46.5	1.7
28	19.53	0.47	15.7	1.7	46.29	0.34	40.3	1.8	47.38	0.31	44.8	1.8
Nov. 7	20.00	0.48	14.0	1.4	46.63	0.35	38.5	1.8	47.69	0.33	43.0	1.9
17	20.48	0.50	12.6	1.1	46.98	0.36	36.7	1.7	48.02	0.34	41.1	1.9
27	20.98	0.50	11.5	0.7	47.34	0.36	35.0	1.6	48.36	0.34	39.2	1.9
Dec. 7	21.48	0.47	10.8	0.4	47.70	0.35	33.4	1.4	48.70	0.34	37.3	1.9
17	21.95	0.44	10.4	0.2	48.05	0.33	32.0	1.1	49.04	0.32	35.4	1.7
27	22.39	0.39	10.6	0.6	48.38	0.30	30.9	0.9	49.36	0.30	33.7	1.5
37	22.78		11.2		48.68		30.0		49.66		32.2	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	η Argus.				α Ursæ Majoris.				δ Leonis.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 10	m. 39	° 58	′ 55	h. 10	m. 54	° 62	′ 30	h. 11	m. 6	° 21	′ 17
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	′
Jan. 1	31.72	0.41	41.0	3.2	54.31	0.56	65.3	0.4	30.53	0.33	78.0	1.3
11	32.13	0.35	44.2	3.5	54.87	0.51	65.7	0.9	30.86	0.31	76.7	1.0
21	32.48	0.28	47.7	3.7	55.38	0.42	66.6	1.4	31.17	0.26	75.7	0.7
31	32.76	0.20	51.4	3.8	55.80	0.33	68.0	1.8	31.43	0.21	75.0	0.4
Feb. 10	32.96	0.12	55.2	3.8	56.13	0.25	69.8	2.2	31.64	0.16	74.6	0.0
20	33.08	0.05	59.0	3.7	56.38	0.15	72.0	2.4	31.80	0.11	74.6	0.4
March 2	33.13	0.03	62.7	3.6	56.53	0.06	74.4	2.6	31.91	0.07	75.0	0.6
12	33.10	0.09	66.3	3.3	56.59	0.04	77.0	2.6	31.98	0.02	75.6	0.8
22	33.01	0.15	69.6	3.0	56.55	0.12	79.6	2.5	32.00	0.02	76.4	0.9
April 1	32.86	0.21	72.6	2.7	56.43	0.19	82.1	2.3	31.98	0.05	77.3	1.0
11	32.65	0.24	75.3	2.2	56.24	0.25	84.4	2.1	31.93	0.07	78.3	1.0
21	32.41	0.27	77.5	1.8	55.99	0.29	86.5	1.7	31.86	0.09	79.3	1.0
May 1	32.14	0.29	79.3	1.4	55.70	0.32	88.2	1.2	31.77	0.10	80.3	0.9
11	31.85	0.30	80.7	0.8	55.38	0.33	89.4	0.7	31.67	0.11	81.2	0.9
21	31.55	0.32	81.5	0.3	55.05	0.34	90.1	0.3	31.56	0.12	82.1	0.7
31	31.23	0.31	81.8	0.1	54.71	0.32	90.4	0.0	31.44	0.11	82.8	0.5
June 10	30.92	0.30	81.7	0.6	54.39	0.30	90.4	0.6	31.33	0.10	83.3	0.3
20	30.62	0.28	81.1	1.1	54.09	0.27	89.8	1.1	31.23	0.09	83 6	0.1
30	30.34	0.25	80.0	1.6	53.82	0.24	88.7	1.5	31.14	0.08	83.7	0.0
July 10	30.09	0.22	78.4	1.9	53.58	0.19	87.2	1.9	31.06	0.06	83.7	0.2
20	29.87	0.17	76.5	2.2	53.39	0.14	85.3	2.3	31.00	0.04	83.5	0.4
30	29.70	0.13	74.3	2.5	53.25	0.09	83.0	2.7	30.96	0.01	83.1	0.7
Aug. 9	29.57	0.07	71.8	2.7	53.16	0.03	80.3	2.9	30.95	0.01	82.4	0.9
19	29.50	0.01	69.1	2.8	53.13	0.03	77.4	3.1	30.96	0.02	81.5	1.0
29	29.49	0.07	66.3	2.8	53.16	0.09	74.3	3.2	30.98	0.07	80.5	1.2
Sept. 8	29.56	0.13	63.5	2.6	53.25	0.16	71.1	3.3	31.05	0.10	79.3	1.4
18	29.69	0.22	60.9	2.4	53.41	0.23	67.8	3.4	31.15	0.13	77.9	1.7
28	29.91	0.28	58.5	2.0	53.64	0.29	64.4	3.4	31.28	0.17	76.2	1.9
Oct. 8	30.19	0.35	56.5	1.5	53.93	0.36	61.0	3.2	31.45	0.20	74.3	2.1
18	30.54	0.42	55.0	1.0	54.29	0.43	57.8	3.0	31.65	0.24	72.2	2.2
28	30.96	0.46	54.0	0.7	54.72	0.49	54.8	2.8	31.89	0.28	70.0	2.2
Nov. 7	31.42	0.49	53.3	0.2	55.21	0.53	52.0	2.5	32.17	0.31	67.8	2.2
17	31.91	0.53	53.5	0.8	55.74	0.59	49.5	2.2	32.48	0.34	65.6	2.3
27	32.44	0.53	54.3	1.4	56.33	0.60	47.3	1.8	32.82	0.35	63.3	2.2
Dec. 7	32.97	0.53	55.7	2.0	56.93	0.62	45.5	1.1	33.17	0.36	61.1	2.1
17	33.50	0.49	57.7	2.4	57.55	0.61	44.4	0.5	33.53	0.36	59.0	1.8
27	33.99	0.45	60.1	3.0	58.16	0.55	43.9	0.0	33.89	0.34	57.2	1.6
37	34.44		63.1		58.71		43.9		34.23		55.6	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Hydræ et Crateris.				β Leonis.				γ Ursæ Majoris.			
	Right Ascension.		Dec. *South*.		Right Ascension.		Dec. *North*.		Right Ascension.		Dec. *North*.	
	h. 11	m. 12	14°	0′	h. 11	m. 41	15°	21′	h. 11	m. 46	54°	28′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	11.83	0.31	13.5	2.5	46.10	0.34	71.9	1.8	18.56	0.53	67.6	0.6
11	12.14	0.28	16.0	2.4	46.44	0.31	70.1	1.4	19.09	0.47	67.0	0.1
21	12.42	0.25	18.4	2.4	46.75	0.27	68.7	1.1	19.56	0.41	67.1	0.6
31	12.67	0.20	20.8	2.3	47.02	0.23	67.6	0.8	19.97	0.35	67.7	1.0
Feb. 10	12.87	0.15	23.1	2.0	47.25	0.19	66.8	0.5	20.32	0.28	68.7	1.5
20	13.02	0.11	25.1	1.8	47.44	0.15	66.3	0.1	20.60	0.21	70.2	1.9
March 2	13.13	0.07	26.9	1.6	47.59	0.10	66.2	0.2	20.81	0.14	72.1	2.3
12	13.20	0.02	28.5	1.4	47.69	0.06	66.4	0.4	20.95	0.07	74.4	2.5
22	13.22	0.01	29.9	1.0	47.75	0.02	66.8	0.7	21.02	0.01	76.9	2.5
April 1	13.21	0.04	30.9	0.8	47.77	0.02	67.5	0.8	21.01	0.06	79.4	2.4
11	13.17	0.07	31.7	0.6	47.75	0.04	68.3	0.9	20.95	0.12	81.8	2.3
21	13.10	0.08	32.3	0.3	47.71	0.06	69.2	0.9	20.83	0.17	84.1	2.1
May 1	13.02	0.09	32.6	0.1	47.65	0.08	70.1	0.9	20.66	0.20	86.2	1.8
11	12.93	0.10	32.7	0.2	47.57	0.09	71.0	0.9	20.46	0.22	88.0	1.4
21	12.83	0.10	32.5	0.3	47.48	0.10	71.9	0.8	20.24	0.24	89.4	1.0
31	12.73	0.11	32.2	0.4	47.38	0.10	72.7	0.6	20.00	0.23	90.4	0.5
June 10	12.62	0.10	31.8	0.6	47.28	0.10	73.3	0.5	19.77	0.24	90.9	0.2
20	12.52	0.09	31.2	0.8	47.18	0.09	73.8	0.4	19.53	0.22	91.1	0.4
30	12.43	0.08	30.4	0.9	47.09	0.09	74.2	0.3	19.31	0.21	90.7	0.8
July 10	12.35	0.07	29.5	1.0	47.00	0.08	74.5	0.1	19.10	0.20	89.9	1.2
20	12.28	0.05	28.5	1.1	46.92	0.06	74.6	0.1	18.90	0.17	88.7	1.5
30	12.23	0.03	27.4	1.0	46.86	0.05	74.5	0.3	18.73	0.13	87.2	2.0
Aug. 9	12.20	0.01	26.4	1.0	46.81	0.03	74.2	0.5	18.60	0.10	85.2	2.4
19	12.19	0.02	25.4	0.9	46.78	0.00	73.7	0.7	18.50	0.06	82.8	2.7
29	12.21	0.05	24.5	0.9	46.78	0.02	73.0	0.9	18.44	0.01	80.1	2.8
Sept. 8	12.26	0.08	23.6	0.7	46.80	0.05	72.1	1.1	18.43	0.04	77.3	3.1
18	12.34	0.11	22.9	0.4	46.85	0.09	71.0	1.4	18.47	0.10	74.2	3.3
28	12.45	0.16	22.5	0.0	46.94	0.12	69.6	1.7	18.57	0.16	70.9	3.4
Oct. 8	12.61	0.20	22.5	0.3	47.06	0.17	67.9	1.8	18.73	0.21	67.5	3.4
18	12.81	0.23	22.8	0.6	47.23	0.21	66.1	2.0	18.94	0.27	64.1	3.4
28	13.04	0.27	23.4	0.9	47.44	0.25	64.1	2.2	19.21	0.34	60.7	3.2
Nov. 7	13.31	0.30	24.3	1.2	47.69	0.28	61.9	2.2	19.55	0.40	57.5	3.0
17	13.61	0.32	25.5	1.7	47.97	0.31	59.7	2.3	19.95	0.44	54.5	2.8
27	13.93	0.34	27.2	2.0	48.28	0.34	57.4	2.3	20.39	0.47	51.7	2.4
Dec. 7	14.27	0.35	29.2	2.2	48.62	0.35	55.1	2.2	20.86	0.49	49.3	2.0
17	14.62	0.34	31.4	2.3	48.97	0.35	52.9	2.1	21.35	0.50	47.3	1.4
27	14.96	0.33	33.7	2.4	49.32	0.34	50.8	2.0	21.85	0.51	45.9	0.8
37	15.29		36.1		49.66		48.8		22.36		45.1	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Chamæleontis.				α^1 Crucis.				β Corvi.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 12	m. 9	78°	30′	h. 12	m. 18	62°	18′	h. 12	m. 26	22°	36′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	′
Jan. 1	60.75	1.17	45.3	2.0	39.41	0.58	2.4	2.1	52.55	0.35	13.2	2.3
11	61.92	1.06	47.3	2.5	39.99	0.53	4.5	2.6	52.90	0.32	15.5	2.4
21	62.98	0.97	49.8	2.9	40.52	0.49	7.1	3.0	53.22	0.31	17.9	2.5
31	63.95	0.82	52.7	3.3	41.01	0.41	10.1	3.3	53.53	0.27	20.4	2.4
Feb. 10	64.77	0.65	56.0	3.6	41.42	0.35	13.4	3.4	53.80	0.23	22.8	2.4
20	65.42	0.50	59.6	3.8	41.77	0.29	16.8	3.5	54.03	0.19	25.2	2.2
March 2	65.92	0.33	63.4	3.9	42.06	0.21	20.3	3.7	54.22	0.15	27.4	2.1
12	66.25	0.16	67.3	3.9	42.27	0.12	24.0	3.6	54.37	0.11	29.5	1.8
22	66.41	0.00	71.2	3.8	42.39	0.05	27.6	3.4	54.48	0.07	31.3	1.6
April 1	66.41	0.16	75.0	3.7	42.44	0.01	31.0	3.3	54.55	0.04	32.9	1.4
11	66.25	0.32	78.7	3.5	42.43	0.06	34.3	3.0	54.59	0.00	34.3	1.2
21	65.93	0.43	82.2	3.2	42.37	0.13	37.3	2.8	54.59	0.02	35.5	0.9
May 1	65.50	0.58	85.4	2.8	42.24	0.18	40.1	2.4	54.57	0.05	36.4	0.6
11	64.92	0.68	88.2	2.4	42.06	0.22	42.5	2.0	54.52	0.06	37.0	0.4
21	64.24	0.76	90.6	2.0	41.84	0.26	44.5	1.6	54.46	0.08	37.4	0.2
31	63.48	0.85	92.6	1.4	41.58	0.28	46.1	1.0	54.38	0.09	37.6	0.1
June 10	62.63	0.88	94.0	0.9	41.30	0.32	47.1	0.6	54.29	0.10	37.7	0.2
20	61.75	0.93	94.9	0.4	40.98	0.32	47.7	0.2	54.19	0.10	37.5	0.5
30	60.82	0.93	95.3	0.2	40.66	0.33	47.9	0.3	54.09	0.11	37.0	0.6
July 10	59.89	0.90	95.1	0.7	40.33	0.33	47.6	0.8	53.98	0.11	36.4	0.8
20	58.99	0.84	94.4	1.3	40.00	0.31	46.8	1.3	53.87	0.10	35.6	1.0
30	58.15	0.77	93.1	1.7	39.69	0.28	45.5	1.7	53.77	0.09	34.6	1.0
Aug. 9	57.38	0.66	91.4	2.1	39.41	0.23	43.8	2.1	53.68	0.08	33.6	1.1
19	56.72	0.50	89.3	2.5	39.18	0.18	41.7	2.4	53.60	0.06	32.5	1.2
29	56.22	0.34	86.8	2.7	39.00	0.12	39.3	2.5	53.54	0.03	31.3	1.1
Sept. 8	55.88	0.17	84.1	2.9	38.88	0.06	36.8	2.7	53.51	0.00	30.2	1.1
18	55.71	0.04	81.2	3.0	38.82	0.04	34.1	2.6	53.51	0.04	29.1	0.9
28	55.75	0.24	78.2	2.9	38.86	0.12	31.5	2.5	53.55	0.08	28.2	0.6
Oct. 8	55.99	0.44	75.3	2.7	38.98	0.22	29.0	2.3	53.63	0.14	27.6	0.4
18	56.43	0.65	72.6	2.3	39.20	0.30	26.7	2.0	53.77	0.18	27.2	0.1
28	57.08	0.82	70.3	2.0	39.50	0.39	24.7	1.6	53.95	0.22	27.1	0.3
Nov. 7	57.90	0.98	68.3	1.5	39.89	0.46	23.1	1.0	54.17	0.27	27.4	0.7
17	58.88	1.10	66.8	1.0	40.35	0.53	22.1	0.6	54.44	0.31	28.1	1.0
27	59.98	1.20	65.8	0.4	40.88	0.58	21.5	0.2	54.75	0.33	29.1	1.4
Dec. 7	61.18	1.23	65.4	0.4	41.46	0.59	21.7	0.6	55.08	0.35	30.5	1.7
17	62.41	1.25	65.8	0.9	42.05	0.60	22.3	1.3	55.43	0.36	32.2	1.9
27	63.66	1.22	66.7	1.6	42.65	0.60	23.6	1.7	55.79	0.37	34.1	2.2
37	64.88		68.3		43.25		25.3		56.16		36.3	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	12 Canum Venaticorum.				α Virginis. (*Spica.*)				η Ursæ Majoris.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 12 m. 49		39° 4′		h. 13 m. 17		10° 24′		h. 13 m. 41		50° 1′	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	20.14	0.40	74.5	1.6	39.36	0.34	49.2	2.2	54.03	0.45	22.8	2.0
11	20.54	0.39	72.9	1.1	39.70	0.34	51.4	2.0	54.48	0.45	20.8	1.4
21	20.93	0.37	71.8	0.6	40.04	0.32	53.4	2.0	54.93	0.44	19.4	0.7
31	21.30	0.33	71.2	0.1	40.36	0.29	55.4	1.9	55.37	0.41	18.7	0.1
Feb. 10	21.63	0.28	71.1	0.5	40.65	0.26	57.3	1.8	55.78	0.37	18.6	0.4
20	21.91	0.24	71.6	0.9	40.91	0.23	59.1	1.6	56.15	0.33	19.0	1.0
March 2	22.15	0.19	72.5	1.4	41.14	0.20	60.7	1.2	56.48	0.28	20.0	1.5
12	22.34	0.14	73.9	1.7	41.34	0.15	61.9	1.0	56.76	0.23	21.5	2.0
22	22.48	0.09	75.6	1.9	41.49	0.12	62.9	0.9	56.99	0.17	23.5	2.3
April 1	22.57	0.04	77.5	2.1	41.61	0.09	63.8	0.7	57.16	0.10	25.8	2.5
11	22.61	0.01	79.6	2.1	41.70	0.06	64.5	0.4	57.26	0.05	28.3	2.6
21	22.62	0.04	81.7	2.1	41.76	0.03	64.9	0.2	57.31	0.01	30.9	2.6
May 1	22.58	0.08	83.8	2.0	41.79	0.01	65.1	0.1	57.30	0.04	33.5	2.5
11	22.50	0.10	85.8	1.8	41.80	0.02	65.2	0.0	57.26	0.09	36.0	2.5
21	22.40	0.12	87.6	1.5	41.78	0.04	65.2	0.2	57.17	0.13	38.5	2.2
31	22.28	0.13	89.1	1.3	41.74	0.05	65.0	0.3	57.04	0.17	40.7	1.8
June 10	22.15	0.15	90.4	0.9	41.69	0.07	64.7	0.4	56.87	0.19	42.5	1.4
20	22.00	0.16	91.3	0.5	41.62	0.09	64.3	0.4	56.68	0.21	43.9	0.9
30	21.84	0.16	91.8	0.1	41.53	0.09	63.9	0.5	56.47	0.22	44.8	0.5
July 10	21.68	0.15	91.9	0.2	41.44	0.10	63.4	0.6	56.25	0.23	45.3	0.2
20	21.53	0.15	91.7	0.5	41.34	0.11	62.8	0.6	56.02	0.24	45.5	0.4
30	21.38	0.14	91.2	1.0	41.23	0.10	62.2	0.6	55.78	0.23	45.1	0.8
Aug. 9	21.24	0.13	90.2	1.3	41.13	0.10	61.6	0.6	55.55	0.23	44.3	1.3
19	21.11	0.10	88.9	1.7	41.03	0.09	61.0	0.5	55.32	0.21	43.0	1.7
29	21.01	0.07	87.2	2.0	40.94	0.06	60.5	0.4	55.11	0.18	41.3	2.1
Sept. 8	20.94	0.04	85.2	2.3	40.88	0.04	60.1	0.3	54.93	0.14	39.2	2.5
18	20.90	0.01	82.9	2.6	40.84	0.00	59.8	0.2	54.79	0.09	36.7	2.8
28	20.91	0.04	80.3	2.9	40.84	0.03	59.6	0.0	54.70	0.05	33.9	3.0
Oct. 8	20.95	0.09	77.4	3.0	40.87	0.07	59.6	0.3	54.65	0.00	30.9	3.4
18	21.04	0.14	74.4	3.1	40.94	0.12	59.9	0.5	54.65	0.04	27.5	3.5
28	21.18	0.20	71.3	3.2	41.06	0.17	60.4	0.8	54.69	0.11	24.0	3.7
Nov. 7	21.38	0.25	68.1	3.2	41.23	0.21	61.2	1.1	54.80	0.21	20.3	3.7
17	21.63	0.31	64.9	3.1	41.44	0.25	62.3	1.4	55.01	0.29	16.6	3.5
27	21.94	0.34	61.8	2.9	41.69	0.30	63.7	1.6	55.30	0.32	13.1	3.4
Dec. 7	22.28	0.37	58.9	2.7	41.99	0.32	65.3	1.8	55.62	0.37	9.7	3.0
17	22.65	0.39	56.2	2.3	42.31	0.34	67.1	2.0	55.99	0.40	6.7	2.6
27	23.04	0.40	53.9	1.8	42.65	0.35	69.1	2.0	56.39	0.44	4.1	2.2
37	23.44		52.1		43.00		71.1		56.83		1.9	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	η Bootis.				β Centauri.				α Bootis. (*Arcturus.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 13	m. 47	° 19	′ 6	h. 13	m. 53	° 59	′ 40	h. 14	m. 9	° 19	′ 55
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	′
Jan. 1	52.19	0.35	47.8	2.3	44.39	0.57	36.9	0.9	7.87	0.34	31.9	2.3
11	52.54	0.34	45.5	1.9	44.96	0.57	37.8	1.4	8.21	0.35	29.6	2.0
21	52.88	0.34	43.6	1.6	45.53	0.57	39.2	1.9	8.56	0.33	27.6	1.7
31	53.22	0.32	42.0	1.1	46.10	0.53	41.1	2.2	8.89	0.32	25.9	1.2
Feb. 10	53.54	0.28	40.9	0.6	46.63	0.49	43.3	2.6	9.21	0.30	24.7	0.8
20	53.82	0.25	40.3	0.1	47.12	0.43	45.9	2.8	9.51	0.27	23.9	0.3
March 2	54.07	0.22	40.2	0.1	47.55	0.38	48.7	2.9	9.78	0.23	23.6	0.1
12	54.29	0.19	40.3	0.4	47.93	0.33	51.6	3.1	10.01	0.20	23.7	0.5
22	54.48	0.15	40.7	0.6	48.26	0.27	54.7	3.1	10.21	0.17	24.2	0.8
April 1	54.63	0.11	41.3	1.0	48.53	0.20	57.8	3.1	10.38	0.13	25.0	1.1
11	54.74	0.08	42.3	1.3	48.73	0.14	60.9	2.9	10.51	0.10	26.1	1.4
21	54.82	0.04	43.6	1.5	48.87	0.09	63.8	2.8	10.61	0.06	27.5	1.5
May 1	54.86	0.02	45.1	1.5	48.96	0.03	66.6	2.7	10.67	0.03	29.0	1.5
11	54.88	0.01	46.6	1.4	48.99	0.03	69.3	2.5	10.70	0.00	30.5	1.6
21	54.87	0.04	48.0	1.4	48.96	0.08	71.8	2.2	10.70	0.02	32.1	1.5
31	54.83	0.06	49.4	1.3	48.88	0.14	74.0	1.9	10.68	0.05	33.6	1.4
June 10	54.77	0.08	50.7	1.2	48.74	0.18	75.9	1.5	10.63	0.07	35.0	1.3
20	54.69	0.10	51.9	0.9	48.56	0.21	77.4	1.0	10.56	0.09	36.3	1.0
30	54.59	0.10	52.8	0.7	48.35	0.26	78.4	0.5	10.47	0.10	37.3	0.8
July 10	54.49	0.12	53.5	0.5	48.09	0.28	78.9	0.3	10.37	0.12	38.1	0.5
20	54.37	0.13	54.0	0.3	47.81	0.30	79.2	0.2	10.25	0.13	38.6	0.3
30	54.24	0.12	54.3	0.0	47.51	0.30	79.0	0.6	10.12	0.14	38.9	0.2
Aug. 9	54.12	0.12	54.3	0.3	47.21	0.30	78.4	1.1	9.98	0.14	38.7	0.6
19	54.00	0.11	54.0	0.5	46.91	0.27	77.3	1.4	9.84	0.13	38.1	0.9
29	53.89	0.10	53.5	0.8	46.64	0.23	75.9	1.8	9.71	0.12	37.2	1.1
Sept. 8	53.79	0.08	52.7	1.1	46.41	0.19	74.1	2.1	9.59	0.10	36.1	1.4
18	53.71	0.04	51.6	1.3	46.22	0.12	72.0	2.3	9.49	0.07	34.7	1.7
28	53.67	0.01	50.3	1.7	46.10	0.05	69.7	2.4	9.42	0.03	33.0	2.1
Oct. 8	53.66	0.03	48.6	2.0	46.05	0.04	67.3	2.4	9.39	0.00	30.9	2.3
18	53.69	0.08	46.6	2.2	46.09	0.12	64.9	2.2	9.39	0.05	28.6	2.5
28	53.77	0.12	44.4	2.3	46.21	0.21	62.7	2.0	9.44	0.10	26.1	2.6
Nov. 7	53.89	0.18	42.1	2.5	46.42	0.30	60.7	1.7	9.54	0.15	23.5	2.7
17	54.07	0.23	39.6	2.7	46.72	0.38	59.0	1.4	9.69	0.20	20.8	2.8
27	54.30	0.28	36.9	2.8	47.10	0.46	57.6	0.9	9.89	0.24	18.0	2.8
Dec. 7	54.58	0.30	34.1	2.6	47.56	0.52	56.7	0.5	10.13	0.28	15.2	2.6
17	54.88	0.33	31.5	2.5	48.08	0.55	56.2	0.2	10.41	0.31	12.6	2.5
27	55.21	0.34	29.0	2.4	48.63	0.58	56.4	0.6	10.72	0.33	10.1	
37	55.55		26.6		49.21		57.0		11.05			

NOTE. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α² Centauri.				ι Bootis.				α² Libræ.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h. 14	m. 29	60°	14′	h. 14	m. 38	27°	40′	h. 14	m. 42	15°	26′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	53.70	0.58	12.9	0.3	43.83	0.33	30.4	2.5	57.43	0.34	43.4	1.6
11	54.28	0.58	13.2	0.9	44.16	0.35	27.9	2.1	57.77	0.35	45.0	1.8
21	54.86	0.58	14.1	1.3	44.51	0.36	25.8	1.6	58.12	0.34	46.8	1.7
31	55.44	0.55	15.4	1.7	44.87	0.34	24.2	1.1	58.46	0.34	48.5	1.6
Feb. 10	55.99	0.53	17.1	2.1	45.21	0.32	23.1	0.6	58.80	0.32	50.1	1.6
20	56.52	0.49	19.2	2.4	45.53	0.29	22.5	0.2	59.12	0.29	51.7	1.4
March 2	57.01	0.44	21.6	2.5	45.82	0.27	22.3	0.4	59.41	0.26	53.1	1.2
12	57.45	0.37	24.1	2.7	46.09	0.24	22.7	0.8	59.67	0.24	54.3	1.1
22	57.82	0.33	26.8	2.9	46.33	0.20	23.5	1.2	59.91	0.20	55.4	1.0
April 1	58.15	0.27	29.7	2.9	46.53	0.16	24.7	1.5	60.11	0.18	56.4	0.8
11	58.42	0.22	32.6	2.9	46.69	0.13	26.2	1.8	60.29	0.15	57.2	0.6
21	58.64	0.15	35.5	2.8	46.82	0.09	28.0	2.0	60.44	0.12	57.8	0.4
May 1	58.79	0.08	38.3	2.7	46.91	0.06	30.0	2.1	60.56	0.09	58.2	0.3
11	58.87	0.03	41.0	2.5	46.97	0.02	32.1	2.0	60.65	0.07	58.5	0.1
21	58.90	0.02	43.5	2.3	46.99	0.01	34.1	2.0	60.72	0.03	58.6	0.0
31	58.88	0.09	45.8	2.1	46.98	0.04	36.1	1.8	60.75	0.00	58.6	0.1
June 10	58.79	0.15	47.9	1.8	46.94	0.06	37.9	1.7	60.75	0.02	58.5	0.1
20	58.64	0.20	49.7	1.4	46.88	0.09	39.6	1.4	60.73	0.05	58.4	0.2
30	58.44	0.24	51.1	1.0	46.79	0.12	41.0	1.1	60.68	0.07	58.2	0.3
July 10	58.20	0.28	52.1	0.5	46.67	0.13	42.1	0.8	60.61	0.09	57.9	0.3
20	57.92	0.30	52.6	0.1	46.54	0.15	42.9	0.5	60.52	0.11	57.6	0.4
30	57.62	0.32	52.7	0.2	46.39	0.16	43.4	0.2	60.41	0.13	57.2	0.5
Aug. 9	57.30	0.33	52.5	0.7	46.23	0.17	43.6	0.2	60.28	0.14	56.7	0.5
19	56.97	0.31	51.8	1.2	46.06	0.16	43.4	0.6	60.14	0.13	56.2	0.4
29	56.66	0.29	50.6	1.5	45.90	0.15	42.8	0.9	60.01	0.12	55.8	0.4
Sept. 8	56.37	0.26	49.1	1.8	45.75	0.13	41.9	1.2	59.89	0.11	55.4	0.4
18	56.11	0.20	47.3	2.1	45.62	0.11	40.7	1.5	59.78	0.08	55.0	0.5
28	55.91	0.12	45.2	2.3	45.51	0.07	39.2	2.0	59.70	0.05	54.5	0.3
Oct. 8	55.79	0.04	42.9	2.3	45.44	0.03	37.2	2.3	59.65	0.01	54.2	0.1
18	55.75	0.04	40.6	2.3	45.41	0.01	34.9	2.5	59.64	0.04	54.1	0.1
28	55.79	0.15	38.3	2.3	45.42	0.07	32.4	2.7	59.68	0.09	54.2	0.3
Nov. 7	55.94	0.25	36.0	2.0	45.49	0.11	29.7	2.9	59.77	0.13	54.5	0.4
17	56.19	0.32	34.0	1.6	45.60	0.17	26.8	3.0	59.90	0.19	54.9	0.8
27	56.51	0.39	32.4	1.3	45.77	0.22	23.8	3.0	60.09	0.24	55.7	1.0
Dec. 7	56.90	0.46	31.1	0.9	45.99	0.26	20.8	3.0	60.33	0.27	56.7	1.3
17	57.36	0.53	30.2	0.5	46.25	0.30	17.8	2.9	60.60	0.31	58.0	1.4
27	57.89	0.56	29.7	0.2	46.55	0.32	14.9	2.6	60.91	0.34	59.4	1.6
37	58.45		29.9		46.87		12.3		61.25		61.0	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Ursæ Minoris.				β Libræ.				α Coronæ Borealis.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 14	m. 51	74°	43′	h. 15	m. 9	8°	51′	h. 15	m. 28	27°	11′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	′
Jan. 1	8.95	0.79	60.8	2.4	17.92	0.82	12.9	1.8	37.07	0.31	39.7	2.7
11	9.74	0.85	58.4	1.6	18.24	0.33	14.7	1.7	37.38	0.33	37.0	2.4
21	10.59	0.89	56.8	1.1	18.57	0.34	16.4	1.7	37.71	0.34	34.6	1.9
31	11.48	0.90	55.7	0.4	18.91	0.33	18.1	1.5	38.05	0.34	32.7	1.4
Feb. 10	12.38	0.88	55.3	0.2	19.24	0.32	19.6	1.4	38.39	0.34	31.3	0.9
20	13.26	0.82	55.5	0.9	19.56	0.29	21.0	1.2	38.73	0.31	30.4	0.4
March 2	14.08	0.73	56.4	1.5	19.85	0.27	22.2	1.0	39.04	0.29	30.0	0.1
12	14.81	0.63	57.9	2.1	20.12	0.25	23.2	0.7	39.33	0.27	30.1	0.6
22	15.44	0.50	60.0	2.5	20.37	0.23	23.9	0.5	39.60	0.25	30.7	1.0
April 1	15.94	0.38	62.5	2.8	20.60	0.20	24.4	0.3	39.85	0.21	31.7	1.4
11	16.32	0.23	65.3	3.0	20.80	0.17	24.7	0.1	40.06	0.17	33.1	1.8
21	16.55	0.09	68.3	3.1	20.97	0.14	24.8	0.1	40.23	0.14	34.9	2.0
May 1	16.64	0.06	71.4	3.2	21.11	0.11	24.7	0.2	40.37	0.11	36.9	2.2
11	16.58	0.20	74.6	2.9	21.22	0.08	24.5	0.3	40.48	0.08	39.1	2.2
21	16.38	0.33	77.5	2.8	21.30	0.06	24.2	0.4	40.56	0.04	41.3	2.2
31	16.05	0.43	80.3	2.5	21.36	0.03	23.8	0.4	40.60	0.00	43.5	2.1
June 10	15.62	0.53	82.8	2.1	21.39	0.01	23.4	0.4	40.60	0.03	45.6	2.0
20	15.09	0.63	84.9	1.5	21.38	0.03	23.0	0.5	40.57	0.05	47.6	1.8
30	14.46	0.70	86.4	1.1	21.35	0.06	22.5	0.4	40.52	0.09	49.4	1.5
July 10	13.76	0.74	87.5	0.7	21.29	0.08	22.1	0.5	40.43	0.12	50.9	1.1
20	13.02	0.79	88.2	0.1	21.21	0.11	21.6	0.5	40.31	0.15	52.0	0.8
30	12.23	0.81	88.3	0.5	21.10	0.12	21.1	0.4	40.16	0.16	52.8	0.6
Aug. 9	11.42	0.79	87.8	1.0	20.98	0.14	20.7	0.4	40.00	0.17	53.4	0.2
19	10.63	0.79	86.8	1.4	20.84	0.13	20.3	0.3	39.83	0.18	53.6	0.2
29	9.84	0.73	85.4	1.8	20.71	0.14	20.0	0.2	39.65	0.18	53.4	0.5
Sept. 8	9.11	0.67	83.6	2.4	20.57	0.12	19.8	0.2	39.47	0.16	52.9	0.9
18	8.44	0.59	81.2	2.9	20.45	0.10	19.6	0.1	39.31	0.15	52.0	1.3
28	7.85	0.51	78.3	3.2	20.35	0.07	19.5	0.1	39.16	0.13	50.7	1.6
Oct. 8	7.34	0.39	75.1	3.4	20.28	0.03	19.6	0.2	39.03	0.08	49.1	1.9
18	6.95	0.26	71.7	3.7	20.25	0.01	19.8	0.4	38.95	0.04	47.2	2.3
28	6.69	0.11	68.0	3.9	20.26	0.06	20.2	0.7	38.91	0.01	44.9	2.6
Nov. 7	6.58	0.03	64.1	3.9	20.32	0.11	20.9	0.9	38.92	0.06	42.3	2.8
17	6.61	0.18	60.2	3.9	20.43	0.15	21.8	1.0	38.98	0.10	39.5	2.8
27	6.79	0.34	56.3	3.7	20.58	0.21	22.8	1.3	39.08	0.17	36.7	3.0
Dec. 7	7.13	0.49	52.6	3.5	20.79	0.25	24.1	1.4	39.25	0.22	33.7	3.1
17	7.62	0.61	49.1	3.1	21.04	0.28	25.5	1.6	39.47	0.25	30.6	3.0
27	8.23	0.73	46.0	2.6	21.32	0.31	27.1	1.7	39.72	0.28	27.6	2.7
37	8.96		43.4		21.63		28.8		40.01		24.9	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Serpentis.				ζ Ursæ Minoris.				β^1 Scorpii.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*	
	h. 15	m. 37	° 6	′ 52	h. 15	m. 49	° 78	′ 13	h. 15	m. 57	° 19	′ 24
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	12.52	0.30	32.9	2.2	12.28	0.80	35.5	2.8	6.27	0.32	41.1	1.1
11	12.82	0.31	30.7	2.0	13.08	0.92	32.7	2.4	6.59	0.33	42.2	1.2
21	13.13	0.32	28.7	1.7	14.00	1.03	30.3	1.7	6.92	0.34	43.4	1.2
31	13.45	0.32	27.0	1.5	15.03	1.09	28.6	1.1	7.26	0.34	44.6	1.2
Feb. 10	13.77	0.31	25.5	1.2	16.12	1.11	27.5	0.5	7.60	0.34	45.8	1.2
20	14.08	0.30	24.3	0.9	17.23	1.09	27.0	0.2	7.94	0.33	47.0	1.1
March 2	14.38	0.29	23.4	0.4	18.32	1.05	27.2	0.9	8.27	0.31	48.1	1.0
12	14.67	0.26	23.0	0.1	19.37	0.95	28.1	1.5	8.58	0.30	49.1	0.9
22	14.93	0.24	22.9	0.2	20.32	0.83	29.6	2.0	8.88	0.27	50.0	0.7
April 1	15.17	0.22	23.1	0.6	21.15	0.68	31.6	2.5	9.15	0.25	50.7	0.6
11	15.39	0.19	23.7	0.8	21.83	0.50	34.1	2.8	9.40	0.22	51.3	0.5
21	15.58	0.15	24.5	1.0	22.33	0.33	36.9	3.0	9.62	0.20	51.8	0.4
May 1	15.73	0.12	25.5	1.1	22.66	0.15	39.9	3.2	9.82	0.17	52.2	0.2
11	15.85	0.10	26.6	1.3	22.81	0.04	43.1	3.2	9.99	0.14	52.4	0.2
21	15.95	0.07	27.9	1.3	22.77	0.23	46.3	3.1	10.13	0.11	52.6	0.1
31	16.02	0.04	29.2	1.3	22.54	0.40	49.4	2.8	10.24	0.07	52.7	0.1
June 10	16.06	0.01	30.5	1.2	22.14	0.55	52.2	2.6	10.31	0.04	52.8	0.0
20	16.07	0.02	31.7	1.2	21.59	0.70	54.8	2.3	10.35	0.01	52.8	0.0
30	16.05	0.05	32.9	1.0	20.89	0.83	57.1	1.8	10.34	0.02	52.8	0.0
July 10	16.00	0.08	33.9	0.9	20.06	0.93	58.9	1.4	10.32	0.06	52.8	0.1
20	15.92	0.11	34.8	0.8	19.13	1.02	60.3	0.9	10.26	0.09	52.7	0.2
30	15.81	0.13	35.6	0.5	18.11	1.08	61.2	0.4	10.17	0.12	52.5	0.2
Aug. 9	15.68	0.14	36.1	0.3	17.03	1.12	61.6	0.2	10.05	0.14	52.3	0.3
19	15.54	0.14	36.4	0.2	15.91	1.13	61.4	0.6	9.91	0.15	52.0	0.3
29	15.40	0.15	36.6	0.1	14.78	1.11	60.8	1.1	9.76	0.15	51.7	0.3
Sept. 8	15.25	0.14	36.5	0.3	13.67	1.07	59.7	1.6	9.61	0.15	51.4	0.4
18	15.11	0.13	36.2	0.5	12.60	1.00	58.1	2.2	9.46	0.14	51.0	0.4
28	14.98	0.10	35.7	0.8	11.60	0.91	55.9	2.5	9.32	0.11	50.6	0.3
Oct. 8	14.88	0.06	34.9	1.0	10.69	0.79	53.4	2.9	9.21	0.07	50.3	0.2
18	14.82	0.02	33.9	1.2	9.90	0.64	50.5	3.2	9.14	0.03	50.1	0.2
28	14.80	0.02	32.7	1.4	9.26	0.47	47.3	3.5	9.11	0.01	49.9	0.1
Nov. 7	14.82	0.07	31.3	1.7	8.79	0.27	43.8	3.8	9.12	0.07	49.8	0.1
17	14.89	0.11	29.6	2.0	8.52	0.08	40.0	3.8	9.19	0.12	49.9	0.2
27	15.00	0.17	27.6	2.1	8.44	0.09	36.2	3.7	9.31	0.18	50.1	0.5
Dec. 7	15.17	0.22	25.5	2.2	8.53	0.30	32.5	3.6	9.49	0.22	50.6	0.7
17	15.39	0.25	23.3	2.2	8.83	0.51	28.9	3.4	9.71	0.25	51.3	0.8
27	15.64	0.28	21.1	2.2	9.34	0.68	25.5	3.2	9.96	0.30	52.1	0.9
37	15.92		18.9		10.02		22.3		10.26		53.0	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	δ Ophiuchi.				α Scorpii. (*Antares.*)				η Draconis.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. m. 16 6		° ′ 3 19		h. m. 16 20		° ′ 26 6		h. m. 16 22		° ′ 61 49	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	50.02	0.28	29.7	1.7	37.19	0.31	41.5	0.6	2.16	0.36	61.4	3.4
11	50.30	0.31	31.4	1.7	37.50	0.33	42.1	0.7	2.52	0.42	58.0	2.9
21	50.61	0.32	33.1	1.6	37.83	0.35	42.8	0.9	2.94	0.47	55.1	2.3
31	50.93	0.32	34.7	1.4	38.18	0.36	43.7	0.9	3.41	0.51	52.8	1.6
Feb. 10	51.25	0.32	36.1	1.1	38.54	0.36	44.6	0.9	3.92	0.53	51.2	1.0
20	51.57	0.30	37.2	0.9	38.90	0.35	45.5	1.0	4.45	0.53	50.2	0.4
March 2	51.87	0.29	38.1	0.7	39.25	0.33	46.5	0.9	4.98	0.51	49.8	0.3
12	52.16	0.28	38.8	0.4	39.58	0.32	47.4	0.9	5.49	0.47	50.1	0.9
22	52.44	0.27	39.2	0.1	39.90	0.30	48.3	0.8	5.96	0.44	51.0	1.5
April 1	52.71	0.24	39.3	0.1	40.20	0.28	49.1	0.7	6.40	0.39	52.5	2.1
11	52.95	0.21	39.2	0.3	40.48	0.26	49.8	0.7	6.79	0.32	54.6	2.5
21	53.16	0.19	38.9	0.5	40.74	0.23	50.5	0.6	7.11	0.26	57.1	2.9
May 1	53.35	0.17	38.4	0.7	40.97	0.20	51.1	0.5	7.37	0.19	60.0	3.1
11	53.52	0.13	37.7	0.8	41.17	0.17	51.6	0.5	7.56	0.11	63.1	3.2
21	53.65	0.10	36.9	0.8	41.34	0.14	52.1	0.5	7.67	0.03	66.3	3.2
31	53.75	0.07	36.1	0.9	41.48	0.10	52.6	0.4	7.70	0.04	69.5	3.1
June 10	53.82	0.04	35.2	0.8	41.58	0.07	53.0	0.4	7.66	0.11	72.6	2.9
20	53.86	0.01	34.4	0.9	41.65	0.02	53.4	0.4	7.55	0.18	75.5	2.7
30	53.87	0.03	33.5	0.8	41.67	0.01	53.8	0.3	7.37	0.25	78.2	2.4
July 10	53.84	0.06	32.7	0.6	41.66	0.05	54.1	0.1	7.12	0.30	80.6	2.0
20	53.78	0.08	32.1	0.5	41.61	0.09	54.2	0.1	6.82	0.36	82.6	1.5
30	53.69	0.11	31.6	0.5	41.52	0.12	54.3	0.1	6.46	0.40	84.1	1.0
Aug. 9	53.58	0.13	31.1	0.4	41.40	0.14	54.4	0.1	6.06	0.42	85.1	0.6
19	53.45	0.14	30.7	0.3	41.26	0.15	54.3	0.2	5.64	0.45	85.7	0.1
29	53.31	0.15	30.4	0.2	41.11	0.17	54.1	0.3	5.19	0.45	85.8	0.5
Sept. 8	53.16	0.15	30.2	0.0	40.94	0.16	53.8	0.4	4.74	0.45	85.3	1.1
18	53.01	0.14	30.2	0.1	40.78	0.15	53.4	0.5	4.29	0.43	84.2	1.5
28	52.87	0.11	30.3	0.3	40.63	0.14	52.9	0.5	3.86	0.39	82.7	1.9
Oct. 8	52.76	0.08	30.6	0.5	40.49	0.10	52.4	0.5	3.47	0.34	80.8	2.3
18	52.68	0.05	31.1	0.7	40.39	0.05	51.9	0.5	3.13	0.29	78.5	2.8
28	52.63	0.01	31.8	0.8	40.34	0.01	51.4	0.5	2.84	0.21	75.7	3.2
Nov. 7	52.64	0.05	32.6	1.0	40.33	0.05	50.9	0.4	2.63	0.13	72.5	3.5
17	52.69	0.10	33.6	1.3	40.38	0.10	50.5	0.2	2.50	0.04	69.0	3.6
27	52.79	0.14	34.9	1.4	40.48	0.16	50.3	0.0	2.46	0.05	65.4	3.7
Dec. 7	52.93	0.19	36.3	1.5	40.64	0.21	50.3	0.1	2.51	0.15	61.7	3.9
17	53.12	0.24	37.8	1.6	40.85	0.25	50.4	0.3	2.66	0.24	57.8	3.7
27	53.36	0.26	39.4	1.7	41.10	0.29	50.7	0.5	2.90	0.30	54.1	3.3
37	53.62		41.1		41.39		51.2		3.20		50.8	

NOTE. —Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Triangali Australis.				ε Ursæ Minoris.				α Herculis.			
	Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 16	m. 33	68°	45′	h. 17	m. 0	82°	15′	h. 17	m. 8	14°	33′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	29.99	0.63	25.6	1.4	37.68	0.69	39.4	3.3	6.25	0.22	11.9	2.3
11	30.62	0.70	24.2	1.1	38.37	0.95	36.1	2.9	6.47	0.26	9.6	2.2
21	31.32	0.75	23.1	0.7	39.32	1.19	33.2	2.4	6.73	0.28	7.4	2.0
31	32.07	0.78	22.4	0.2	40.51	1.39	30.8	2.0	7.01	0.30	5.4	1.6
Feb. 10	32.85	0.79	22.2	0.1	41.90	1.53	28.8	1.3	7.31	0.30	3.8	1.3
20	33.64	0.80	22.3	0.6	43.43	1.59	27.5	0.7	7.61	0.31	2.5	0.9
March 2	34.44	0.78	22.9	0.9	45.02	1.60	26.8	0.0	7.92	0.31	1.6	0.4
12	35.22	0.75	23.8	1.3	46.62	1.58	26.8	0.6	8.23	0.30	1.2	0.0
22	35.97	0.70	25.1	1.6	48.20	1.48	27.4	1.2	8.53	0.29	1.2	0.3
April 1	36.67	0.65	26.7	1.9	49.68	1.31	28.6	1.8	8.82	0.26	1.5	0.8
11	37.32	0.60	28.6	2.2	50.99	1.11	30.4	2.3	9.08	0.25	2.3	1.2
21	37.92	0.52	30.8	2.4	52.10	0.88	32.7	2.7	9.33	0.23	3.5	1.4
May 1	38.44	0.45	33.2	2.5	52.98	0.61	35.4	2.9	9.56	0.21	4.9	1.7
11	38.89	0.37	35.7	2.6	53.59	0.35	38.3	3.1	9.77	0.18	6.6	1.9
21	39.26	0.28	38.3	2.6	53.94	0.06	41.4	3.2	9.95	0.15	8.5	2.0
31	39.54	0.18	40.9	2.5	54.00	0.23	44.6	3.2	10.10	0.11	10.5	2.0
June 10	39.72	0.08	43.4	2.6	53.77	0.50	47.8	3.0	10.21	0.07	12.5	1.9
20	39.80	0.02	46.0	2.5	53.27	0.75	50.8	2.9	10.28	0.04	14.4	1.8
30	39.78	0.11	48.5	2.3	52.52	1.01	53.7	2.6	10.32	0.00	16.2	1.7
July 10	39.67	0.21	50.8	1.9	51.51	1.23	56.3	2.3	10.32	0.03	17.9	1.6
20	39.46	0.29	52.7	1.6	50.28	1.42	58.6	1.9	10.29	0.07	19.5	1.3
30	39.17	0.36	54.3	1.3	48.86	1.57	60.5	1.4	10.22	0.11	20.8	1.1
Aug. 9	38.81	0.43	55.6	0.8	47.29	1.70	61.9	0.9	10.11	0.14	21.9	0.8
19	38.38	0.48	56,4	0.3	45.59	1.77	62.8	0.4	9.97	0.15	22.7	0.5
29	37.90	0.49	56.7	0.1	43.82	1.83	63.2	0.0	9.82	0.17	23.2	0.3
Sept. 8	37.41	0.48	56.6	0.6	41.99	1.84	63.2	0.5	9.65	0.18	23.5	0.0
18	36.93	0.46	56.0	1.1	40.15	1.81	62.7	1.0	9.47	0.17	23.5	0.3
28	36.47	0.40	54.9	1.5	38.34	1.74	61.7	1.6	9.30	0.16	23.2	0.6
Oct. 8	36.07	0.32	53.4	1.9	36.60	1.61	60.1	2.0	9.14	0.14	22.6	0.9
18	35.75	0.24	51.5	2.1	34.99	1.44	58.1	2.4	9.00	0.11	21.7	1.3
28	35.51	0.13	49.4	2.4	33.55	1.24	55.7	2.7	8.89	0.07	20.4	1.5
Nov. 7	35.38	0.00	47.0	2.5	32.31	1.01	53.0	3.1	8.82	0.02	18.9	1.8
17	35.38	0.12	44.5	2.6	31.30	0.74	49.9	3.4	8.80	0.02	17.1	2.0
27	35.50	0.26	41.9	2.5	30.56	0.43	46.5	3.6	8.82	0.07	15.1	2.1
Dec. 7	35.76	0.37	39.4	2.3	30.13	0.13	42.9	3.6	8.89	0.12	13.0	2.3
17	36.13	0.48	37.1	2.0	30.00	0.19	39.3	3.5	9.01	0.16	10.7	2.4
27	36.61	0.58	35.1	1.7	30.19	0.50	35.8	3.4	9.17	0.20	8.3	2.3
37	37.19		33.4		30.69		32.4		9.37		6.0	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Draconis.				α Ophiuchi.				σ Octantis.				
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.			Dec. *South.*	
	h. 17	m. 27	° 52	′ 24	h. 17	m. 28	° 12	′ 39	h. 17			° 89	′ 16
	s.	s.	″	″	s.	s.	″	″	m.	s.	s.	″	′
Jan. 1	10.11	0.21	17.0	3.2	16.36	0.21	51.5	2.3	40	47.98	11.29	39.4	2.9
11	10.32	0.28	13.8	3.3	16.57	0.24	49.2	2.1	40	59.27	13.92	36.5	2.5
21	10.60	0.33	10.5	2.9	16.81	0.26	47.1	1.9	41	13.19	16.18	34.0	2.2
31	10.93	0.36	7.6	2.4	17.07	0.29	45.2	1.6	41	29.37	18.07	31.8	1.7
Feb. 10	11.29	0.40	5.2	1.7	17.36	0.30	43.6	1.3	41	47.44	19.54	30.1	1.3
20	11.69	0.41	3.5	1.0	17.66	0.30	42.3	0.9	42	6.98	20.52	28.8	0.8
March 2	12.10	0.42	2.5	0.6	17.96	0.30	41.4	0.5	42	27.50	20.96	28.0	0.3
12	12.52	0.41	1.9	0.1	18.26	0.30	40.9	0.0	42	48.46	20.94	27.7	0.2
22	12.93	0.40	2.0	0.8	18.56	0.29	40.9	0.3	43	9.40	20.53	27.9	0.7
April 1	13.33	0.38	2.8	1.5	18.85	0.28	41.2	0.7	43	29.93	19.70	28.6	1.1
11	13.71	0.34	4.3	2.0	19.13	0.27	41.9	1.1	43	49.63	18.46	29.7	1.5
21	14.05	0.30	6.3	2.4	19.40	0.25	43.0	1.4	44	8.09	16.85	31.2	2.0
May 1	14.35	0.26	8.7	2.7	19.65	0.22	44.4	1.6	44	24.94	14.92	33.2	2.3
11	14.61	0.21	11.4	3.0	19.87	0.20	46.0	1.8	44	39.86	12.65	35.5	2.6
21	14.82	0.15	14.4	3.2	20.07	0.17	47.8	1.9	44	52.51	10.13	38.1	2.8
31	14.97	0.10	17.6	3.3	20.24	0.13	49.7	2.0	45	2.64	7.42	40.9	3.1
June 10	15.07	0.04	20.9	3.2	20.37	0.09	51.7	1.9	45	10.06	4.51	44.0	3.2
20	15.11	0.03	24.1	3.1	20.46	0.06	53.6	1.9	45	14.57	1.47	47.2	3.1
30	15.08	0.08	27.2	2.9	20.52	0.02	55.5	1.7	45	16.04	1.52	50.3	3.1
July 10	15.00	0.14	30.1	2.6	20.54	0.02	57.2	1.5	45	14.52	4.41	53.4	2.9
20	14.86	0.20	32.7	2.3	20.52	0.06	58.7	1.4	45	10.11	7.17	56.3	2.7
30	14.66	0.24	35.0	1.9	20.46	0.09	60.1	1.1	45	2.94	9.74	59.0	2.4
Aug. 9	14.42	0.28	36.9	1.4	20.37	0.12	61.2	0.9	44	53.20	11.98	61.4	1.9
19	14.14	0.31	38.3	1.0	20.25	0.15	62.1	0.6	44	41.22	13.79	63.3	1.4
29	13.83	0.34	39.3	0.5	20.10	0.16	62.7	0.4	44	27.43	15.11	64.7	0.9
Sept. 8	13.49	0.35	39.8	0.0	19.94	0.17	63.1	0.1	44	12.32	15.88	65.6	0.3
18	13.14	0.35	39.8	0.5	19.77	0.17	63.2	0.2	43	56.44	16.02	65.9	0.3
28	12.79	0.33	39.3	1.0	19.60	0.17	63.0	0.5	43	40.42	15.48	65.6	0.9
Oct. 8	12.46	0.31	38.3	1.4	19.43	0.15	62.5	0.7	43	24.94	14.30	64.7	1.4
18	12.15	0.27	36.9	2.0	19.28	0.12	61.8	1.0	43	10.64	12.52	63.3	2.0
28	11.88	0.22	34.9	2.5	19.16	0.08	60.8	1.3	42	58.12	10.18	61.3	2.5
Nov. 7	11.66	0.17	32.4	2.8	19.08	0.05	59.5	1.6	42	47.94	7.41	58.8	2.9
17	11.49	0.11	29.6	3.1	19.03	0.01	57.9	1.8	42	40.53	4.30	55.9	3.1
27	11.38	0.03	26.5	3.3	19.04	0.05	56.1	2.0	42	36.23	0.96	52.8	3.2
Dec. 7	11.35	0.05	23.2	3.6	19.09	0.10	54.1	2.3	42	35.27	2.50	49.6	3.3
17	11.40	0.11	19.6	3.6	19.19	0.15	51.8	2.2	42	37.77	5.99	46.3	3.2
27	11.51	0.18	16.0	3.5	19.34	0.19	49.6	2.3	42	43.76	9.26	43.1	3.1
37	11.69		12.5		19.53		47.3		42	53.02		40.0	

Note. — Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Draconis.				μ¹ Sagittarii.				α Lyræ. (*Vega.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h.	m.			h.	m.			h.	m.		
	17	53	51°	29′	18	5	21°	5′	18	32	38°	38′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	15.01	0.18	72.8	3.5	10.99	0.21	40.0	0.3	3.83	0.12	60.4	3.2
11	15.19	0.23	69.3	3.2	11.20	0.24	40.3	0.3	3.95	0.18	57.2	3.0
21	15.42	0.29	66.1	2.9	11.44	0.27	40.6	0.3	4.13	0.23	54.2	2.8
31	15.71	0.34	63.2	2.5	11.71	0.29	40.9	0.2	4.36	0.26	51.4	2.5
Feb. 10	16.05	0.37	60.7	2.0	12.00	0.31	41.1	0.2	4.62	0.29	48.9	2.1
20	16.42	0.39	58.7	1.3	12.31	0.32	41.3	0.2	4.91	0.32	46.8	1.5
March 2	16.81	0.41	57.4	0.8	12.63	0.33	41.5	0.1	5.23	0.33	45.3	0.9
12	17.22	0.41	56.6	0.2	12.96	0.34	41.6	0.0	5.56	0.34	44.4	0.4
22	17.63	0.40	56.4	0.6	13.30	0.33	41.6	0.1	5.90	0.34	44.0	0.2
April 1	18.03	0.39	57.0	1.2	13.63	0.32	41.5	0.2	6.24	0.33	44.2	0.8
11	18.42	0.35	58.2	1.8	13.95	0.31	41.3	0.2	6.57	0.33	45.0	1.4
21	18.77	0.33	60.0	2.2	14.26	0.30	41.1	0.3	6.90	0.31	46.4	1.9
May 1	19.10	0.29	62.2	2.6	14.56	0.28	40.8	0.3	7.21	0.29	48.3	2.2
11	19.39	0.24	64.8	2.9	14.84	0.26	40.5	0.4	7.50	0.26	50.5	2.6
21	19.63	0.19	67.7	3.2	15.10	0.23	40.1	0.3	7.76	0.23	53.1	2.9
31	19.82	0.14	70.9	3.2	15.33	0.20	39.8	0.2	7.99	0.19	56.0	3.0
June 10	19.96	0.07	74.1	3.3	15.53	0.16	39.6	0.2	8.18	0.14	59.0	3.1
20	20.03	0.01	77.4	3.2	15.69	0.13	39.4	0.1	8.32	0.09	62.1	3.0
30	20.04	0.04	80.6	3.1	15.82	0.08	39.3	0.1	8.41	0.04	65.1	3.0
July 10	20.00	0.11	83.7	2.8	15.90	0.04	39.2	0.0	8.45	0.00	68.1	2.8
20	19.89	0.16	86.5	2.5	15.94	0.01	39.2	0.1	8.45	0.06	70.9	2.6
30	19.73	0.21	89.0	2.1	15.93	0.06	39.3	0.1	8.39	0.11	73.5	2.4
Aug. 9	19.52	0.25	91.1	1.8	15.87	0.09	39.4	0.0	8.28	0.15	75.9	2.0
19	19.27	0.29	92.9	1.4	15.78	0.12	39.4	0.1	8.13	0.19	77.9	1.6
29	18.98	0.33	94.3	0.9	15.66	0.15	39.5	0.1	7.94	0.22	79.5	1.2
Sept. 8	18.65	0.35	95.2	0.3	15.51	0.16	39.6	0.1	7.72	0.23	80.7	0.8
18	18.30	0.34	95.5	0.2	15.35	0.17	39.7	0.1	7.49	0.25	81.5	0.4
28	17.96	0.32	95.3	0.6	15.18	0.17	39.8	0.1	7.24	0.25	81.9	0.2
Oct. 8	17.64	0.31	94.7	1.0	15.01	0.15	39.7	0.1	6.99	0.24	81.7	0.6
18	17.33	0.29	93.7	1.7	14.86	0.13	39.6	0.1	6.75	0.22	81.1	1.0
28	17.04	0.24	92.0	2.2	14.73	0.09	39.5	0.1	6.53	0.20	80.1	1.5
Nov. 7	16.80	0.19	89.8	2.6	14.64	0.05	39.4	0.0	6.33	0.16	78.6	1.9
17	16.61	0.13	87.2	2.9	14.59	0.00	39.4	0.1	6.17	0.11	76.7	2.4
27	16.48	0.07	84.3	3.2	14.59	0.05	39.3	0.1	6.06	0.06	74.3	2.7
Dec. 7	16.41	0.00	81.1	3.3	14.64	0.10	39.2	0.1	6.00	0.01	71.6	2.9
17	16.41	0.07	77.8	3.6	14.74	0.13	39.3	0.2	5.99	0.05	68.7	3.0
27	16.48	0.14	74.2	3.5	14.87	0.18	39.5	0.2	6.04	0.09	65.7	3.2
37	16.62		70.7		15.05		39.7		6.13		62.5	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	β Lyræ.				ζ Aquilæ.				δ Aquilæ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 18	m. 44	33°	11′	h. 18	m. 58	13°	38′	h. 19	m. 18	2°	49′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	46.16	0.13	46.8	3.0	48.58	0.12	65.4	2.3	15.70	0.12	49.1	1.4
11	46.29	0.16	43.8	2.9	48.70	0.16	63.1	2.0	15.82	0.15	47.7	1.4
21	46.45	0.20	40.9	2.6	48.86	0.20	61.1	1.8	15.97	0.18	46.3	1.2
31	46.65	0.24	38.3	2.4	49.06	0.22	59.3	1.6	16.15	0.21	45.1	1.1
Feb. 10	46.89	0.27	35.9	2.0	49.28	0.24	57.7	1.3	16.36	0.23	44.0	0.9
20	47.16	0.29	33.9	1.6	49.52	0.27	56.4	1.0	16.59	0.26	43.1	0.6
March 2	47.45	0.31	32.3	0.9	49.79	0.28	55.4	0.6	16.85	0.27	42.5	0.3
12	47.76	0.32	31.4	0.4	50.07	0.29	54.8	0.2	17.12	0.28	42.2	0.0
22	48.08	0.33	31.0	0.2	50.36	0.30	54.6	0.2	17.40	0.30	42.2	0.3
April 1	48.41	0.33	31.2	0.8	50.66	0.30	54.8	0.6	17.70	0.30	42.5	0.6
11	48.74	0.32	32.0	1.2	50.96	0.30	55.4	1.0	18.00	0.31	43.1	1.0
21	49.06	0.31	33.2	1.6	51.26	0.29	56.4	1.4	18.31	0.30	44.1	1.2
May 1	49.37	0.28	34.8	2.0	51.55	0.28	57.8	1.7	18.61	0.28	45.3	1.5
11	49.65	0.26	36.8	2.5	51.83	0.27	59.5	1.9	18.89	0.28	46.8	1.6
21	49.91	0.24	39.3	2.7	52.10	0.24	61.4	2.1	19.17	0.26	48.4	1.7
31	50.15	0.20	42.0	2.9	52.34	0.21	63.5	2.2	19.43	0.23	50.1	1.8
June 10	50.35	0.15	44.9	3.0	52.55	0.18	65.7	2.2	19.66	0.20	51.9	1.8
20	50.50	0.11	47.9	2.9	52.73	0.14	67.9	2.2	19.86	0.17	53.7	1.7
30	50.61	0.07	50.8	2.8	52.87	0.10	70.1	2.1	20.03	0.13	55.4	1.6
July 10	50.68	0.02	53.6	2.8	52.97	0.06	72.2	2.0	20.16	0.09	57.0	1.5
20	50.70	0.03	56.4	2.6	53.03	0.01	74.2	1.8	20.25	0.04	58.5	1.4
30	50.67	0.08	59.0	2.2	53.04	0.03	76.0	1.6	20.29	0.00	59.9	1.2
Aug. 9	50.59	0.12	61.2	1.9	53.01	0.07	77.6	1.4	20.29	0.04	61.1	1.0
19	50.47	0.16	63.1	1.6	52.94	0.10	79.0	1.1	20.25	0.08	62.1	0.8
29	50.31	0.19	64.7	1.2	52.84	0.14	80.1	0.9	20.17	0.11	62.9	0.6
Sept. 8	50.12	0.22	65.9	0.9	52.70	0.16	81.0	0.6	20.06	0.14	63.5	0.3
18	49.90	0.22	66.8	0.4	52.54	0.17	81.6	0.3	19.92	0.16	63.8	0.2
28	49.68	0.23	67.2	0.0	52.37	0.18	81.9	0.0	19.76	0.16	64.0	0.0
Oct. 8	49.45	0.22	67.2	0.5	52.19	0.17	81.9	0.3	19.60	0.16	64.0	0.2
18	49.23	0.21	66.7	0.9	52.02	0.16	81.6	0.6	19.44	0.15	63.8	0.4
28	49.02	0.18	65.8	1.3	51.86	0.13	81.0	0.9	19.29	0.13	63.4	0.6
Nov. 7	48.84	0.14	64.5	1.6	51.73	0.11	80.1	1.2	19.16	0.10	62.8	0.8
17	48.70	0.10	62.9	2.1	51.62	0.07	78.9	1.4	19.06	0.06	62.0	0.9
27	48.60	0.06	60.8	2.5	51.55	0.02	77.5	1.6	19.00	0.03	61.1	1.1
Dec. 7	48.54	0.01	58.3	2.7	51.53	0.01	75.9	1.9	18.97	0.00	60.0	1.2
17	48.53	0.05	55.6	2.8	51.54	0.06	74.0	2.0	18.97	0.05	58.8	1.3
27	48.58	0.10	52.8	2.9	51.60	0.10	72.0	2.1	19.02	0.10	57.5	1.4
37	48.68		49.9		51.70		69.9		19.12		56.1	

Note —Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	γ Aquilæ.				α Aquilæ. (*Altair.*)				β Aquilæ.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. m. 19 39		° ′ 10 15		h. m. 19 43		° ′ 8 29		h. m. 19 48		° ′ 6 2	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	26.08	0.09	55.4	1.8	46.78	0.08	28.9	1.6	15.79	0.08	60.5	1.5
11	26.17	0.12	53.6	1.8	46.86	0.12	27.3	1.6	15.87	0.12	59.0	1.5
21	26.29	0.16	51.8	1.6	46.98	0.16	25.7	1.5	15.99	0.15	57.5	1.4
31	26.45	0.18	50.2	1.4	47.14	0.18	24.2	1.4	16.14	0.18	56.1	1.2
Feb. 10	26.63	0.21	48.8	1.2	47.32	0.21	22.8	1.1	16.32	0.21	54.9	1.0
20	26.84	0.24	47.6	0.9	47.53	0.24	21.7	0.8	16.53	0.23	53.9	0.7
March 2	27.08	0.26	46.7	0.5	47.77	0.26	20.9	0.4	16.76	0.25	53.2	0.4
12	27.34	0.28	46.2	0.2	48.03	0.27	20.5	0.1	17.01	0.27	52.8	0.1
22	27.62	0.29	46.0	0.2	48.30	0.29	20.4	0.2	17.28	0.29	52.7	0.3
April 1	27.91	0.30	46.2	0.6	48.59	0.30	20.6	0.5	17.57	0.30	53.0	0.6
11	28.21	0.31	46.8	1.0	48.89	0.30	21.1	0.9	17.87	0.31	53.6	0.9
21	28.52	0.30	47.8	1.3	49.19	0.31	22.0	1.4	18.18	0.30	54.5	1.2
May 1	28.82	0.28	49.1	1.6	49.50	0.30	23.4	1.7	18.48	0.29	55.7	1.6
11	29.10	0.29	50.7	1.8	49.80	0.28	25.1	1.8	18.77	0.29	57.3	1.8
21	29.39	0.27	52.5	2.0	50.08	0.27	26.9	1.9	19.06	0.28	59.1	1.9
31	29.66	0.25	54.5	2.1	50.35	0.25	28.8	2.1	19.34	0.25	61.0	1.9
June 10	29.91	0.22	56.6	2.2	50.60	0.22	30.9	2.1	19.59	0.23	62.9	2.0
20	30.13	0.18	58.8	2.1	50.82	0.19	33.0	2.1	19.82	0.19	64.9	1.9
30	30.31	0.14	60.9	2.1	51.01	0.15	35.1	2.0	20.01	0.15	66.8	1.9
July 10	30.45	0.10	63.0	2.0	51.16	0.11	37.1	1.9	20.16	0.11	68.7	1.7
20	30.55	0.05	65.0	1.8	51.27	0.06	39.0	1.8	20.27	0.07	70.4	1.6
30	30.60	0.01	66.8	1.6	51.33	0.01	40.8	1.6	20.34	0.02	72.0	1.5
Aug. 9	30.61	0.03	68.4	1.4	51.34	0.02	42.4	1.3	20.36	0.02	73.5	1.2
19	30.58	0.07	69.8	1.2	51.32	0.07	43.7	1.1	20.34	0.06	74.7	1.0
29	30.51	0.11	71.0	0.9	51.25	0.10	44.8	0.9	20.28	0.10	75.7	0.8
Sept. 8	30.40	0.14	71.9	0.7	51.15	0.13	45.7	0.6	20.18	0.13	76.5	0.6
18	30.26	0.15	72.6	0.4	51.02	0.15	46.3	0.4	20.05	0.14	77.1	0.3
28	30.11	0.16	73.0	0.2	50.87	0.16	46.7	0.2	19.91	0.15	77.4	0.1
Oct. 8	29.95	0.17	73.2	0.1	50.71	0.16	46.9	0.1	19.76	0.16	77.5	0.1
18	29.78	0.16	73.1	0.4	50.55	0.16	46.8	0.3	19.60	0.16	77.4	0.3
28	29.62	0.14	72.7	0.6	50.39	0.14	46.5	0.6	19.44	0.14	77.1	0.6
Nov. 7	29.48	0.12	72.1	0.9	50.25	0.12	45.9	0.9	19.30	0.12	76.5	0.8
17	29.36	0.09	71.2	1.1	50.13	0.08	45.0	1.0	19.18	0.08	75.7	1.0
27	29.27	0.05	70.1	1.3	50.05	0.05	44.0	1.2	19.10	0.05	74.7	1.1
Dec. 7	29.22	0.01	68.8	1.5	50.00	0.02	42.8	1.3	19.05	0.02	73.6	1.3
17	29.21	0.02	67.3	1.6	49.98	0.02	41.5	1.5	19.03	0.02	72.3	1.4
27	29.23	0.06	65.7	1.6	50.00	0.07	40.0	1.6	19.05	0.05	70.9	1.4
37	29.29		64.1		50.07		38.4		19.10		69.5	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	λ Ursæ Minoris.				α² Capricorni.				α Pavonis.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *South.*	
	h. 20		88° 52′		h. m. 20 10		12° 59′		h. m. 20 14		57° 11′	
	m. s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	5 22.73	4.87	52.5	2.9	5.58	0.07	16.5	0.3	16.72	0.08	32.8	2.3
11	5 17.86	2.69	49.6	3.2	5.65	0.11	16.8	0.3	16.80	0.16	30.5	2.4
21	5 15.17	0.46	46.4	3.3	5.76	0.14	17.1	0.1	16.96	0.22	28.1	2.4
31	5 14.71	1.76	43.1	3.2	5.90	0.18	17.2	0.0	17.18	0.28	25.7	2.4
Feb. 10	5 16.47	3.87	39.9	2.9	6.08	0.20	17.2	0.0	17.46	0.33	23.3	2.4
20	5 20.34	5.82	37.0	2.7	6.28	0.23	17.2	0.2	17.79	0.38	20.9	2.3
March 2	5 26.16	7.44	34.3	2.2	6.51	0.25	17.0	0.5	18.17	0.42	18.6	2.1
12	5 33.60	8.75	32.1	1.6	6.76	0.27	16.5	0.6	18.59	0.46	16.5	1.9
22	5 42.35	9.77	30.5	1.1	7.03	0.29	15.9	0.8	19.05	0.49	14.6	1.6
April 1	5 52.12	10.31	29.4	0.7	7.32	0.31	15.1	1.0	19.54	0.51	13.0	1.4
11	6 2.43	10.42	28.7	0.1	7.63	0.32	14.1	1.1	20.05	0.53	11.6	1.2
21	6 12.85	10.17	28.6	0.6	7.95	0.32	13.0	1.2	20.58	0.54	10.4	0.9
May 1	6 23.02	9.62	29.2	1.2	8.27	0.32	11.8	1.3	21.12	0.54	9.5	0.5
11	6 32.64	8.67	30.4	1.7	8.59	0.31	10.5	1.3	21.66	0.52	9.0	0.2
21	6 41.31	7.42	32.1	2.2	8.90	0.30	9.2	1.3	22.18	0.50	8.8	0.2
31	6 48.73	5.97	34.3	2.6	9.20	0.28	7.9	1.3	22.68	0.46	9.0	0.5
June 10	6 54.70	4.37	36.9	3.0	9.48	0.26	6.6	1.2	23.14	0.42	9.5	0.8
20	6 59.07	2.60	39.9	3.2	9.74	0.23	5.4	1.1	23.56	0.37	10.3	1.2
30	7 1.67	0.81	43.1	3.4	9.97	0.19	4.3	0.9	23.93	0.31	11.5	1.4
July 10	7 2.48	1.03	46.5	3.4	10.16	0.15	3.4	0.8	24.24	0.23	12.9	1.8
20	7 1.45	2.85	49.9	3.4	10.31	0.10	2.6	0.6	24.47	0.16	14.7	1.9
30	6 58.60	4.61	53.3	3.4	10.41	0.05	2.0	0.5	24.63	0.08	16.6	1.9
Aug. 9	6 53.99	6.27	56.7	3.2	10.46	0.01	1.5	0.3	24.71	0.00	18.5	2.0
19	6 47.72	7.80	59.9	3.0	10.47	0.04	1.2	0.1	24.71	0.08	20.5	1.9
29	6 39.92	9.16	62.9	2.8	10.43	0.07	1.1	0.0	24.63	0.15	22.4	1.8
Sept. 8	6 30.76	10.38	65.7	2.4	10.36	0.10	1.1	0.1	24.48	0.21	24.2	1.6
18	6 20.38	11.43	68.1	2.0	10.26	0.13	1.2	0.1	24.27	0.26	25.8	1.4
28	6 8.95	12.22	70.1	1.6	10.13	0.15	1.3	0.3	24.01	0.29	27.2	1.0
Oct. 8	5 56.73	12.74	71.7	1.1	9.98	0.15	1.6	0.3	23.72	0.30	28.2	0.6
18	5 43.99	12.97	72.8	0.6	9.83	0.15	1.9	0.3	23.42	0.31	28.8	0.3
28	5 31.02	12.92	73.4	0.0	9.68	0.14	2.2	0.4	23.11	0.29	29.1	0.3
Nov. 7	5 18.10	12.57	73.4	0.5	9.54	0.12	2.6	0.3	22.82	0.26	28.8	0.7
17	5 5.53	11.93	72.9	1.0	9.42	0.09	2.9	0.4	22.56	0.22	28.1	1.1
27	4 53.60	10.94	71.9	1.5	9.33	0.06	3.3	0.3	22.34	0.16	27.0	1.4
Dec. 7	4 42.66	9.62	70.4	2.0	9.27	0.02	3.6	0.4	22.18	0.10	25.6	1.7
17	4 33.04	7.98	68.4	2.5	9.25	0.02	4.0	0.4	22.08	0.03	23.9	2.0
27	4 25.06	6.01	65.9	2.8	9.27	0.05	4.4	0.3	22.05	0.05	21.9	2.3
37	4 19.05		63.1		9.32		4.7		22.10		19.6	

NOTE —Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	α Cygni.		61¹ Cygni.		ζ Cygni.	
	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*	Right Ascension.	Dec. *North.*
	h. m. 20 36 s. s.	° ′ 44 45 ″ ″	h. m. 21 0 s. s.	° ′ 38 2 ″ ″	h. m. 21 6 s. s.	° ′ 29 38 ″ ″
Jan. 1	31.25 0.04	74.5 2.8	27.34 0.03	53.4 2.4	49.40 0.03	30.3 2.2
11	31.21 0.01	71.7 2.9	27.31 0.01	51.0 2.5	49.37 0.01	28.1 2.3
21	31.22 0.06	68.8 3.1	27.32 0.05	48.5 2.6	49.38 0.05	25.8 2.3
31	31.28 0.12	65.7 2.9	27.37 0.10	45.9 2.6	49.43 0.09	23.5 2.2
Feb. 10	31.40 0.17	62.8 2.6	27.47 0.15	43.3 2.5	49.52 0.12	21.3 2.1
20	31.57 0.21	60.2 2.3	27.62 0.18	40.8 2.1	49.64 0.16	19.2 1.8
March 2	31.78 0.26	57.9 1.9	27.80 0.23	38.7 1.6	49.80 0.20	17.4 1.5
12	32.04 0.29	56.0 1.4	28.03 0.27	37.1 1.2	50.00 0.24	15.9 1.1
22	32.33 0.33	54.6 0.8	28.30 0.29	35.9 0.7	50.24 0.27	14.8 0.6
April 1	32.66 0.35	53.8 0.3	28.59 0.32	35.2 0.2	50.51 0.29	14.2 0.1
11	33.01 0.37	53.5 0.3	28.91 0.35	35.0 0.3	50.80 0.31	14.1 0.4
21	33.38 0.37	53.8 0.9	29.26 0.36	35.3 0.8	51.11 0.33	14.5 0.9
May 1	33.75 0.37	54.7 1.5	29.62 0.37	36.1 1.4	51.44 0.33	15.4 1.3
11	34.12 0.37	56.2 1.9	29.99 0.37	37.5 1.9	51.77 0.34	16.7 1.8
21	34.49 0.35	58.1 2.3	30.36 0.35	39.4 2.3	52.11 0.32	18.5 2.1
31	34.84 0.32	60.4 2.7	30.71 0.32	41.7 2.7	52.43 0.31	20.6 2.5
June 10	35.16 0.28	63.1 3.0	31.03 0.30	44.4 3.0	52.74 0.28	23.1 2.7
20	35.44 0.24	66.1 3.3	31.33 0.27	47.4 3.2	53.02 0.26	25.8 2.9
30	35.68 0.20	69.4 3.4	31.60 0.22	50.6 3.2	53.28 0.22	28.7 2.9
July 10	35.88 0.14	72.8 3.3	31.82 0.18	53.8 3.3	53.50 0.18	31.6 3.0
20	36.02 0.08	76.1 3.3	32.00 0.13	57.1 3.3	53.68 0.13	34.6 2.9
30	36.10 0.02	79.4 3.3	32.13 0.08	60.4 3.2	53.81 0.08	37.5 2.8
Aug. 9	36.12 0.03	82.7 3.1	32.21 0.02	63.6 3.1	53.89 0.03	40.3 2.7
19	36.09 0.09	85.8 2.8	32.23 0.02	66.7 2.8	53.92 0.02	43.0 2.4
29	36.00 0.14	88.6 2.6	32.21 0.08	69.5 2.5	53.90 0.06	45.4 2.2
Sept. 8	35.86 0.17	91.2 2.2	32.13 0.12	72.0 2.2	53.84 0.10	47.6 1.8
18	35.69 0.21	93.4 1.8	32.01 0.16	74.2 1.9	53.74 0.13	49.4 1.4
28	35.48 0.23	95.2 1.3	31.85 0.18	76.1 1.5	53.61 0.16	50.8 1.2
Oct. 8	35.25 0.26	96.5 0.9	31.67 0.19	77.6 1.1	53.45 0.17	52.0 0.9
18	34.99 0.26	97.4 0.4	31.48 0.20	78.7 0.6	53.28 0.18	52.9 0.5
28	34.73 0.26	97.8 0.1	31.28 0.20	79.3 0.1	53.10 0.18	53.4 0.0
Nov. 7	34.47 0.24	97.7 0.6	31.08 0.20	79.4 0.3	52.92 0.17	53.4 0.5
17	34.23 0.21	97.1 1.1	30.88 0.18	79.1 0.7	52.75 0.16	52.9 0.8
27	34.02 0.19	96.0 1.6	30.70 0.16	78.4 1.1	52.59 0.14	52.1 1.2
Dec. 7	33.83 0.16	94.4 2.0	30.54 0.12	77.3 1.6	52.45 0.11	50.9 1.5
17	33.67 0.11	92.4 2.3	30.42 0.09	75.7 2.0	52.34 0.08	49.4 1.7
27	33.56 0.05	90.1 2.7	30.33 0.06	73.7 2.2	52.26 0.04	47.7 2.0
37	33.51	87.4	30.27	71.5	52.22	45.7

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	*α* Cephei.				*β* Aquarii.				*β* Cephei.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 21	m. 15	61°	58′	h. 21	m. 24	6°	11′	h. 21	m. 26	69°	55′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	6.60	0.20	53.9	2.7	0.46	0.00	61.8	0.5	43.61	0.33	65.9	2.6
11	6.40	0.11	51.2	3.0	0.46	0.03	62.3	0.5	43.28	0.24	63.3	2.9
21	6.29	0.05	48.2	3.1	0.49	0.07	62.8	0.4	43.04	0.14	60.4	3.2
31	6.24	0.04	45.1	3.2	0.56	0.09	63.2	0.2	42.90	0.03	57.2	3.2
Feb. 10	6.28	0.12	41.9	3.1	0.65	0.13	63.4	0.1	42.87	0.09	54.0	3.2
20	6.40	0.20	38.8	2.9	0.78	0.16	63.5	0.1	42.96	0.21	50.8	3.0
March 2	6.60	0.27	35.9	2.6	0.94	0.18	63.4	0.3	43.17	0.32	47.8	2.8
12	6.87	0.34	33.3	2.2	1.12	0.21	63.1	0.6	43.49	0.42	45.0	2.4
22	7.21	0.41	31.1	1.6	1.33	0.24	62.5	0.8	43.91	0.52	42.6	1.8
April 1	7.62	0.46	29.5	1.0	1.57	0.26	61.7	1.0	44.43	0.58	40.8	1.3
11	8.08	0.49	28.5	0.4	1.83	0.29	60.7	1.3	45.01	0.63	39.5	0.8
21	8.57	0.52	28.1	0.2	2.12	0.30	59.4	1.5	45.64	0.67	38.7	0.1
May 1	9.09	0.53	28.3	0.8	2.42	0.31	57.9	1.6	46.31	0.68	38.6	0.5
11	9.62	0.52	29.1	1.4	2.73	0.32	56.3	1.7	46.99	0.68	39.1	1.1
21	10.14	0.50	30.5	2.0	3.05	0.32	54.6	1.8	47.67	0.65	40.2	1.7
31	10.64	0.46	32.5	2.4	3.37	0.31	52.8	1.8	48.32	0.61	41.9	2.2
June 10	11.10	0.41	34.9	2.8	3.68	0.29	51.0	1.8	48.93	0.54	44.1	2.7
20	11.51	0.36	37.7	3.2	3.97	0.27	49.2	1.7	49.47	0.46	46.8	3.1
30	11.87	0.29	40.9	3.4	4.24	0.25	47.5	1.6	49.93	0.38	49.9	3.3
July 10	12.16	0.21	44.3	3.6	4.49	0.21	45.9	1.4	50.31	0.28	53.2	3.6
20	12.37	0.14	47.9	3.7	4.70	0.16	44.5	1.2	50.59	0.18	56.8	3.7
30	12.51	0.06	51.6	3.7	4.86	0.12	43.3	1.0	50.77	0.07	60.5	3.7
Aug. 9	12.57	0.02	55.3	3.6	4.98	0.07	42.3	0.8	50.84	0.03	64.2	3.7
19	12.55	0.10	58.9	3.4	5.05	0.03	41.5	0.6	50.81	0.14	67.9	3.7
29	12.45	0.18	62.3	3.2	5.08	0.01	40.9	0.4	50.67	0.24	71.6	3.5
Sept. 8	12.27	0.24	65.5	3.0	5.07	0.05	40.5	0.4	50.43	0.32	75.1	3.2
18	12.03	0.29	68.5	2.7	5.02	0.08	40.1	0.2	50.11	0.41	78.3	2.9
28	11.74	0.35	71.2	2.2	4.94	0.11	40.1	0.3	49.70	0.48	81.2	2.5
Oct. 8	11.39	0.39	73.4	1.7	4.83	0.12	40.4	0.3	49.22	0.53	83.7	2.0
18	11.00	0.41	75.1	1.2	4.71	0.13	40.7	0.3	48.69	0.56	85.7	1.5
28	10.59	0.42	76.3	0.8	4.58	0.13	41.0	0.4	48.13	0.61	87.2	1.0
Nov. 7	10.17	0.41	77.1	0.2	4.45	0.13	41.4	0.5	47.52	0.61	88.2	0.5
17	9.76	0.40	77.3	0.4	4.32	0.11	41.9	0.6	46.91	0.60	88.7	0.1
27	9.36	0.39	76.9	1.1	4.21	0.10	42.5	0.5	46.31	0.57	88.6	0.7
Dec. 7	8.97	0.35	75.8	1.6	4.11	0.07	43.0	0.6	45.74	0.53	87.9	1.3
17	8.62	0.30	74.2	2.1	4.04	0.04	43.6	0.6	45.21	0.46	86.6	1.9
27	8.32	0.21	72.1	2.5	4.00	0.02	44.2	0.5	44.75	0.39	84.7	2.3
37	8.11		69.6		3.98		44.7		44.36		82.4	

Note. —Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ε Pegasi.				α Aquarii.				α Gruis.			
	Right Ascension.		Dec. *North*.		Right Ascension.		Dec. *South*.		Right Ascension.		Dec. *South*.	
	h. m. 21 37		° ′ 9 13		h. m. 21 58		° ′ 1 0		h. m. 21 59		° ′ 47 38	
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	8.51	0.02	11.5	1.2	25.15	0.03	53.5	0.7	11.06	0.06	80.7	1.5
11	8.49	0.00	10.3	1.2	25.12	0.01	54.2	0.7	11.00	0.02	79.2	1.8
21	8.49	0.04	9.1	1.3	25.11	0.03	54.9	0.6	10.98	0.02	77.4	2.1
31	8.53	0.08	7.8	1.2	25.14	0.05	55.5	0.5	11.00	0.07	75.3	2.3
Feb. 10	8.61	0.10	6.6	0.9	25.19	0.09	56.0	0.4	11.07	0.12	73.0	2.5
20	8.71	0.13	5.7	0.7	25.28	0.12	56.4	0.1	11.19	0.16	70.5	2.5
March 2	8.84	0.16	5.0	0.5	25.40	0.15	56.5	0.2	11.35	0.21	68.0	2.6
12	9.00	0.20	4.5	0.2	25.55	0.18	56.3	0.3	11.56	0.25	65.4	2.6
22	9.20	0.23	4.3	0.1	25.73	0.21	56.0	0.6	11.81	0.29	62.8	2.6
April 1	9.43	0.25	4.4	0.5	25.94	0.24	55.4	0.9	12.10	0.33	60.2	2.5
11	9.68	0.28	4.9	0.8	26.18	0.26	54.5	1.2	12.43	0.36	57.7	2.4
21	9.96	0.30	5.7	1.2	26.44	0.29	53.3	1.4	12.79	0.39	55.3	2.2
May 1	10.26	0.31	6.9	1.5	26.73	0.31	51.9	1.6	13.18	0.42	53.1	1.9
11	10.57	0.32	8.4	1.8	27.04	0.31	50.3	1.8	13.60	0.44	51.2	1.6
21	10.89	0.32	10.2	2.0	27.35	0.33	48.5	1.9	14.04	0.45	49.6	1.3
31	11.21	0.31	12.2	2.1	27.68	0.31	46.6	2.0	14.49	0.44	48.3	1.0
June 10	11.52	0.28	14.3	2.2	27.99	0.30	44.6	2.0	14.93	0.42	47.3	0.6
20	11.80	0.27	16.5	2.3	28.29	0.29	42.6	2.0	15.35	0.39	46.7	0.2
30	12.07	0.25	18.8	2.2	28.58	0.26	40.6	1.9	15.74	0.37	46.5	0.1
July 10	12.32	0.21	21.0	2.2	28.84	0.23	38.7	1.7	16.11	0.32	46.6	0.5
20	12.53	0.17	23.2	2.0	29.07	0.19	37.0	1.6	16.43	0.26	47.1	0.9
30	12.70	0.12	25.2	1.9	29.26	0.15	35.4	1.4	16.69	0.21	48.0	1.2
Aug. 9	12.82	0.08	27.1	1.8	29.41	0.11	34.0	1.2	16.90	0.15	49.2	1.5
19	12.90	0.03	28.9	1.5	29.52	0.06	32.8	0.9	17.05	0.08	50.7	1.7
29	12.93	0.00	30.4	1.3	29.58	0.02	31.9	0.7	17.13	0.02	52.4	1.8
Sept. 8	12.93	0.04	31.7	1.0	29.60	0.02	31.2	0.5	17.15	0.04	54.2	1.9
18	12.89	0.08	32.7	0.8	29.58	0.05	30.7	0.3	17.11	0.09	56.1	1.9
28	12.81	0.10	33.5	0.5	29.53	0.08	30.4	0.1	17.02	0.15	58.0	1.8
Oct. 8	12.71	0.12	34.0	0.3	29.45	0.11	30.3	0.0	16.87	0.18	59.8	1.6
18	12.59	0.14	34.3	0.1	29.34	0.12	30.3	0.2	16.69	0.20	61.4	1.2
28	12.45	0.13	34.4	0.2	29.22	0.13	30.5	0.4	16.49	0.22	62.6	0.9
Nov. 7	12.32	0.14	34.2	0.4	29.09	0.12	30.9	0.5	16.27	0.22	63.5	0.6
17	12.18	0.12	33.8	0.6	28.97	0.11	31.4	0.5	16.05	0.21	64.1	0.3
27	12.06	0.10	33.2	0.8	28.86	0.10	31.9	0.6	15.84	0.19	64.4	0.3
Dec. 7	11.96	0.09	32.4	1.0	28.76	0.09	32.5	0.7	15.65	0.16	64.1	0.7
17	11.87	0.06	31.4	1.1	28.67	0.07	33.2	0.7	15.49	0.12	63.4	1.0
27	11.81	0.03	30.3	1.2	28.60	0.04	33.9	0.8	15.37	0.10	62.4	1.3
37	11.78		29.1		28.56		34.7		15.27		61.1	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ζ Pegasi.				α Piscis Australis. (*Fomalhaut.*)				α Pegasi. (*Markab.*)			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *South.*		Right Ascension.		Dec. *North.*	
	h. 22	m. 34	10°	5′	h. 22	m. 49	30°	22′	h. 22	m. 57	14°	26′
	s.	s.	″	″	s.	s.	″	″	s.	s.	″	″
Jan. 1	18.71	0.06	7.5	1.0	43.74	0.08	58.9	0.6	37.45	0.08	11.8	1.0
11	18.65	0.04	6.5	1.2	43.66	0.05	58.3	0.9	37.37	0.06	10.8	1.2
21	18.61	0.02	5.3	1.0	43.61	0.03	57.4	1.0	37.31	0.04	9.6	1.2
31	18.59	0.01	4.3	1.0	43.58	0.01	56.4	1.3	37.27	0.01	8.4	1.2
Feb. 10	18.60	0.04	3.3	0.9	43.59	0.04	55.1	1.5	37.26	0.02	7.2	1.1
20	18.64	0.08	2.4	0.8	43.63	0.07	53.6	1.7	37.28	0.05	6.1	0.9
March 2	18.72	0.11	1.6	0.5	43.70	0.11	51.9	2.0	37.33	0.08	5.2	0.8
12	18.83	0.15	1.1	0.3	43.81	0.14	49.9	2.1	37.41	0.12	4.4	0.5
22	18.98	0.18	0.8	0.0	43.95	0.19	47.8	2.2	37.53	0.16	3.9	0.2
April 1	19.16	0.22	0.8	0.4	44.14	0.23	45.6	2.3	37.69	0.20	3.7	0.2
11	19.38	0.25	1.2	0.8	44.37	0.26	43.3	2.3	37.89	0.23	3.9	0.5
21	19.63	0.27	2.0	1.1	44.63	0.29	41.0	2.3	38.12	0.26	4.4	0.8
May 1	19.90	0.29	3.1	1.4	44.92	0.32	38.7	2.3	38.38	0.29	5.2	1.2
11	20.19	0.31	4.5	1.6	45.24	0.34	36.4	2.2	38.67	0.31	6.4	1.5
21	20.50	0.33	6.1	1.9	45.58	0.36	34.2	2.0	38.98	0.33	7.9	1.8
31	20.83	0.32	8.0	2.1	45.94	0.36	32.2	1.8	39.31	0.33	9.7	2.0
June 10	21.15	0.32	10.1	2.2	46.30	0.35	30.4	1.5	39.64	0.32	11.7	2.2
20	21.47	0.30	12.3	2.3	46.65	0.35	28.9	1.3	39.96	0.31	13.9	2.3
30	21.77	0.28	14.6	2.3	47.00	0.33	27.6	1.0	40.27	0.30	16.2	2.4
July 10	22.05	0.25	16.9	2.2	47.33	0.30	26.6	0.6	40.57	0.27	18.6	2.3
20	22.30	0.21	19.1	2.2	47.63	0.27	26.0	0.2	40.84	0.24	20.9	2.3
30	22.51	0.18	21.3	2.0	47.90	0.23	25.8	0.1	41.08	0.20	23.2	2.3
Aug. 9	22.69	0.14	23.3	1.9	48.13	0.18	25.9	0.3	41.28	0.16	25.5	2.0
19	22.83	0.09	25.2	1.6	48.31	0.13	26.2	0.7	41.44	0.11	27.5	1.7
29	22.92	0.05	26.8	1.4	48.44	0.08	26.9	1.0	41.55	0.07	29.2	1.6
Sept. 8	22.97	0.01	28.2	1.2	48.52	0.03	27.9	1.1	41.62	0.04	30.8	1.5
18	22.98	0.02	29.4	0.9	48.55	0.02	29.0	1.3	41.66	0.00	32.3	1.4
28	22.96	0.06	30.3	0.7	48.53	0.05	30.3	1.3	41.66	0.03	33.7	1.1
Oct. 8	22.90	0.08	31.0	0.5	48.48	0.08	31.6	1.4	41.63	0.07	34.8	0.8
18	22.82	0.10	31.5	0.3	48.40	0.11	33.0	1.3	41.56	0.09	35.6	0.5
28	22.72	0.11	31.8	0.0	48.29	0.14	34.3	1.1	41.47	0.10	36.1	0.2
Nov. 7	22.61	0.11	31.8	0.2	48.15	0.14	35.4	1.0	41.37	0.11	36.3	0.0
17	22.50	0.12	31.6	0.4	48.01	0.14	36.4	0.8	41.26	0.12	36.3	0.3
27	22.38	0.12	31.2	0.6	47.87	0.14	37.2	0.5	41.14	0.11	36.0	0.4
Dec. 7	22.26	0.10	30.6	0.8	47.73	0.12	37.7	0.2	41.03	0.11	35.6	0.7
17	22.16	0.09	29.8	0.9	47.61	0.11	37.9	0.0	40.92	0.10	34.9	0.9
27	22.07	0.07	28.9	1.0	47.50	0.09	37.9	0.4	40.82	0.09	34.0	1.0
37	22.00		27.9		47.41		37.5		40.73		33.0	

Note. —Before the 22d of March the Sidereal day of the Month begins at the Sidereal 0h. *after* the Mean Noon ;

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT WASHINGTON.

Sidereal Day of the Month.	ι Piscium.				γ Cephei.			
	Right Ascension.		Dec. *North.*		Right Ascension.		Dec. *North.*	
	h. 23 m. 32		4° 51′		h. 23 m. 33		76°	
	s.	s.	″	″	s.	s.	′ ″	″
Jan. 1	35.16	0.08	4.0	0.8	26.30	0.84	50 20.5	1.1
11	35.08	0.07	3.2	0.8	25.46	0.76	50 19.4	1.5
21	35.01	0.06	2.4	0.8	24.70	0.66	50 17.9	2.0
31	34.95	0.04	1.6	0.7	24.04	0.53	50 15.9	2.5
Feb. 10	34.91	0.01	0.9	0.4	23.51	0.39	50 13.4	2.8
20	34.90	0.02	0.5	0.3	23.12	0.23	50 10.6	3.0
March 2	34.92	0.05	0.2	0.1	22.89	0.05	50 7.6	3.0
12	34.97	0.10	0.1	0.0	22.84	0.13	50 4.6	3.0
22	35.07	0.13	0.1	0.3	22.97	0.31	50 1.6	2.9
April 1	35.20	0.16	0.4	0.6	23.28	0.48	49 58.7	2.6
11	35.36	0.20	1.0	0.9	23.76	0.63	49 56.1	2.1
21	35.56	0.24	1.9	1.2	24.39	0.77	49 54.0	1.6
May 1	35.80	0.27	3.1	1.4	25.16	0.87	49 52.4	1.2
11	36.07	0.29	4.5	1.6	26.03	0.95	49 51.2	0.6
21	36.36	0.31	6.1	1.8	26.98	1.00	49 50.6	0.0
31	36.67	0.32	7.9	2.0	27.98	1.02	49 50.6	0.5
June 10	36.99	0.33	9.9	2.1	29.00	1.01	49 51.1	1.2
20	37.32	0.32	12.0	2.1	30.01	0.97	49 52.3	1.7
30	37.64	0.31	14.1	2.2	30.98	0.91	49 54.0	2.2
July 10	37.95	0.28	16.3	2.1	31.89	0.83	49 56.2	2.6
20	38.23	0.26	18.4	2.0	32.72	0.73	49 58.8	3.0
30	38.49	0.23	20.4	1.8	33.45	0.61	50 1.8	3.3
Aug. 9	38.72	0.19	22.2	1.6	34.06	0.49	50 5.1	3.6
19	38.91	0.16	23.8	1.4	34.55	0.35	50 8.7	3.7
29	39.07	0.11	25.2	1.1	34.90	0.21	50 12.4	3.9
Sept. 8	39.18	0.07	26.3	0.9	35.11	0.06	50 16.3	3.8
18	39.25	0.04	27.2	0.7	35.17	0.09	50 20.1	3.8
28	39.29	0.01	27.9	0.5	35.08	0.23	50 23.9	3.7
Oct. 8	39.30	0.03	28.4	0.3	34.85	0.36	50 27.6	3.4
18	39.27	0.05	28.7	0.0	34.49	0.47	50 31.0	3.2
28	39.22	0.08	28.7	0.1	34.02	0.58	50 34.2	2.8
Nov. 7	39.14	0.08	28.6	0.3	33.44	0.68	50 37.0	2.3
17	39.06	0.09	28.3	0.4	32.76	0.77	50 39.3	1.8
27	38.97	0.10	27.9	0.5	31.99	0.83	50 41.1	1.3
Dec. 7	38.87	0.10	27.4	0.6	31.16	0.86	50 42.4	0.6
17	38.77	0.10	26.8	0.7	30.30	0.87	50 43.0	0.0
27	38.67	0.09	26.1	0.8	29.43	0.86	50 43.0	0.7
37	38.58		25.3		28.57		50 42.3	

after the 22d of March it begins at the Sidereal 0h. *before* the Mean Noon.

TABLE GIVING THE CORRECTION OF THREE OF THE POLAR STARS FOR TERMS OF NUTATION INVOLVING 2 ☾.

☾ or ☾—180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		☾ or ☾—180°.	☾ or ☾—180°.	51 Cephei.		σ Octanis.		λ Urs. Min.		☾ or ☾—180°.
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.			R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	
°	s.	″	s.	″	s.	″	°	°	s.	″	s.	″	s.	″	°
0	+.018	+.09	—.025	—.09	—.159	—.08	90	45	—.122	+.01	—.436	+.01	+.224	—.04	135
1	.014	.09	.040	.09	.151	.08	91	46	.123	.00	.435	.01	.229	.04	136
2	.009	.09	.055	.09	.143	.08	92	47	.124	.00	.433	.02	.234	.04	137
3	.005	.09	.070	.09	.135	.08	93	48	.124	+.00	.431	.02	.239	.04	138
4	+.001	.09	.085	.09	.127	.08	94	49	.124	—.01	.428	.02	.244	.04	139
5	—.003	+.09	—.100	—.09	—.118	—.08	95	50	—.124	—.01	—.425	+.02	+.249	—.03	140
6	.008	.09	.115	.08	.109	.08	96	51	.123	.01	.421	.03	.253	.03	141
7	.012	.09	.130	.08	.100	.08	97	52	.123	.02	.417	.03	.256	.03	142
8	.017	.09	.144	.08	.091	.08	98	53	.122	.02	.412	.03	.259	.02	143
9	.021	.09	.158	.08	.082	.08	99	54	.122	.02	.407	.04	.252	.02	144
10	—.025	+.09	—.172	—.08	—.073	—.09	100	55	—.121	—.02	—.401	+.04	+.255	—.02	145
11	.029	.09	.186	.08	.064	.09	101	56	.121	.03	.395	.04	.267	.02	146
12	.033	.09	.200	.08	.055	.09	102	57	.120	.03	.389	.04	.269	.01	147
13	.037	.08	.213	.08	.046	.09	103	58	.119	.03	.382	.05	.271	.01	148
14	.041	.08	.226	.08	.036	.09	104	59	.117	.04	.374	.05	.273	—.01	149
15	—.045	+.08	—.239	—.08	—.026	—.09	105	60	—.115	—.04	—.365	+.05	+.274	+.00	150
16	.049	.08	.251	.07	.017	.09	106	61	.114	.04	.356	.05	.275	.00	151
17	.053	.08	.263	.07	—.008	.09	107	62	.112	.04	.347	.06	.275	.00	152
18	.056	.08	.275	.07	+.002	.09	108	63	.110	.05	.338	.06	.275	.01	153
19	.060	.08	.287	.07	.012	.09	109	64	.108	.05	.328	.06	.275	.01	154
20	—.065	+.08	—.299	—.07	+.022	—.09	110	65	—.106	—.05	—.318	+.06	+.275	+.01	155
21	.069	.07	.310	.07	.032	.09	111	66	.102	.06	.307	.07	.274	.02	156
22	.073	.07	.320	.06	.041	.09	112	67	.100	.06	.296	.07	.272	.02	157
23	.076	.07	.330	.06	.050	.08	113	68	.098	.06	.284	.07	.270	.02	158
24	.079	.07	.340	.06	.060	.08	114	69	.095	.06	.272	.07	.268	.02	159
25	—.082	+.07	—.350	—.06	+.070	—.08	115	70	—.093	—.06	—.261	+.07	+.266	+.03	160
26	.085	.06	.359	.05	.079	.08	116	71	.090	.07	.249	.08	.263	.03	161
27	.088	.06	.368	.05	.088	.08	117	72	.087	.07	.237	.08	.260	.03	162
28	.091	.06	.376	.05	.097	.08	118	73	.084	.07	.224	.08	.257	.04	163
29	.094	.05	.383	.04	.106	.08	119	74	.080	.07	.211	.08	.254	.04	164
30	—.097	+.05	—.390	—.04	+.115	—.08	120	75	—.077	—.07	—.197	+.08	+.250	+.04	165
31	.100	.05	.396	.04	.124	.08	121	76	.074	.08	.183	.09	.246	.04	166
32	.103	.05	.402	.03	.133	.08	122	77	.070	.08	.169	.09	.242	.05	167
33	.105	.04	.408	.03	.142	.07	123	78	.066	.08	.155	.09	.237	.05	168
34	.107	.04	.413	.03	.150	.07	124	79	.062	.08	.141	.09	.232	.05	169
35	—.109	+.04	—.418	—.02	+.158	—.07	125	80	—.059	—.08	—.126	+.09	+.227	+.06	170
36	.111	.04	.423	.02	.165	.07	126	81	.055	.08	.111	.09	.221	.06	171
37	.113	.03	.427	.02	.172	.06	127	82	.050	.08	.096	.09	.215	.06	172
38	.115	.03	.430	—.01	.179	.06	128	83	.047	.09	.081	.09	.209	.06	173
39	.116	.03	.432	+.01	.186	.06	129	84	.043	.09	.066	.09	.203	.06	174
40	—.117	+.03	—.434	+.01	+.193	—.06	130	85	—.039	—.09	—.051	+.09	+.196	+.07	175
41	.118	.02	.435	.00	.199	.05	131	86	.035	.09	.036	.09	.189	.07	176
42	.119	.02	.436	.00	.206	.05	132	87	.030	.09	.021	.09	.182	.07	177
43	.120	.01	.436	.00	.212	.05	133	88	.026	.09	—.006	.09	.175	.07	178
44	.121	.01	.436	.00	.218	.05	134	89	.022	.09	+.009	.09	.167	.07	179
45	.122	.01	.436	+.01	+.224	—.04	135	90	—.018	—.09	+.025	+.09	+.159	+.08	180

Note. — When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap-parent Noon.	Mean Noon.	Ap-parent Noon.	Right Ascen-sion.	Decli-nation.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
Jan. 1	18 49 14.71	15.46	—22 58 37.8	36.9	11.034	12.98	+ 4 3.89	16 18.38	1 11.07	18 45 10.90
2	18 53 39.34	40.18	22 53 12.4	11.3	11.018	14.12	4 31.97	18.37	11.01	18 49 7.46
3	18 58 3.58	4.49	22 47 19.7	18.4	11.001	15.26	4 59.65	18.37	10.96	18 53 4.02
4	19 2 27.40	28.39	22 40 59.9	58.4	10.983	16.38	5 26.92	18.37	10.91	18 57 0.58
5	19 6 50.77	51.85	22 34 13.2	11.5	10.964	17.49	5 53.75	18.36	10.85	19 0 57.13
6	19 11 13.65	14.81	22 26 59.8	57.8	10.943	18.60	6 20.08	18.34	10.78	19 4 53.69
7	19 15 36.03	37.25	22 19 19.9	17.7	10.922	19.70	6 45.90	18.30	10.71	19 8 50.25
8	19 19 57.90	59.20	22 11 13.8	11.3	10 899	20.79	7 11.21	18.27	10.64	19 12 46.82
9	19 24 19.21	20.58	22 2 41.6	38.8	10.876	21.88	7 35.97	18.23	10.57	19 16 43.37
10	19 28 39.97	41.41	21 53 43.7	40.6	10.853	22.94	8 0.17	18.19	10.50	19 20 39.93
11	19 33 0.13	1.64	21 44 20.3	16.9	10.827	24.00	8 23.78	18.14	10.41	19 24 36.48
12	19 37 19.69	21.26	21 34 31.5	27.8	10.801	25.04	8 46.79	18.08	10.33	19 28 33.04
13	19 41 38.63	40.26	21 24 17.8	13.8	10.775	26.08	9 9.17	18.02	10.24	19 32 29.60
14	19 45 56.93	58.62	21 13 39.4	35.1	10.749	27.11	9 30.91	17.95	10.15	19 36 26.16
15	19 50 14.58	16.34	21 2 36.6	31.9	10.721	28.11	9 52. 0	17.86	10.06	19 40 22.72
16	19 54 31.56	33.38	20 51 9.6	4.6	10.693	29.11	10 12.43	17.78	9.96	19 44 19.27
17	19 58 47.86	49.73	20 39 18.8	13.5	10.665	30.10	10 32.17	17.69	9.86	19 48 15.83
18	20 3 3.45	5.37	20 26 64.5	58.8	10.635	31.08	10 51.20	17.60	9.76	19 52 12.39
19	20 7 18.33	20.29	20 14 27.0	21.0	10.605	32.04	11 9.52	17.50	9.66	19 56 8.95
20	20 11 32.49	34.50	20 1 26.5	20.2	10.574	32.99	11 27.11	17.40	9.56	20 0 5.51
21	20 15 45.90	47.95	19 47 63.5	56.8	10.543	33.91	11 43.97	17.29	9.45	20 4 2.06
22	20 19 58.55	60.64	19 34 18.5	11.5	10.511	34.83	12 0.05	17.18	9.34	20 7 58.62
23	20 24 10.43	12.56	19 20 11.7	4.4	10.479	35.73	12 15.37	17.07	9.23	20 11 55.18
24	20 28 21.52	23.68	19 5 43.3	35.6	10.446	36.62	12 29.91	16.96	9.12	20 15 51.74
25	20 32 31.82	34.02	18 50 53.9	45.9	10.413	37.48	12 43.64	16.84	9.01	20 19 48.29
26	20 36 41.31	43.54	18 35 44.0	35.7	10.379	38.33	12 56.56	16.71	8.90	20 23 44.85
27	20 40 49.98	52.24	18 20 13.8	5.2	10.344	39.17	13 8.67	16.58	8.79	20 27 41.41
28	20 44 57.83	60.11	18 4 23.8	14.9	10.309	39.98	13 19.96	16.45	8.68	20 31 37.96
29	20 49 4.84	7.14	17 48 14.4	5.2	10.274	40.79	13 30.40	16.32	8.57	20 35 34.52
30	20 53 11.02	13.34	17 31 46.1	36.6	10.239	41.57	13 40.01	16.19	8.45	20 39 31.08
31	20 57 16.35	18.69	17 14 59.2	49.4	10.204	42.33	13 48.79	16.05	8.33	20 43 27.63
Feb. 1	21 1 20.84	23.19	16 57 54.2	44.2	10.169	43.08	13 56.71	15.91	8.21	20 47 24.19
2	21 5 24.49	26.85	16 40 31.5	21.2	10.134	43.80	14 3.79	15.76	8.09	20 51 20.75
3	21 9 27.31	29.68	16 22 51.4	40.9	10.099	44.52	14 10.05	15.61	7.98	20 55 17.30
4	21 13 29.28	31.65	16 4 54.4	43.6	10.064	45.22	14 5.46	15.44	7.87	20 59 13.86
5	21 17 30.42	32.80	15 46 41.0	30.0	10.030	45.89	14 20.04	15.27	7.75	21 3 10.41
6	21 21 30.74	33.12	15 28 11.5	0.3	9.996	46.56	14 23.79	15.10	7.63	21 7 6.97
7	21 25 30.24	32.62	15 9 26.4	15.0	9.963	47.20	14 26.72	14.93	7.52	21 11 3.53
8	21 29 28.94	31.32	14 50 26.0	14.4	9.930	47.82	14 28.85	14.76	7.41	21 15 0.09
9	21 33 26.85	29.23	14 31 10.8	59.1	9.897	48.44	14 30.20	14.58	7.30	21 18 56.64
10	21 37 23.97	26.34	14 11 41.0	29.1	9.864	49.03	14 30.76	14.40	7.19	21 22 53.20
11	21 41 20.34	22.70	13 51 57.1	45.1	9.832	49.61	14 30.57	14.21	7.08	21 26 49.75
12	21 45 15.94	18.29	13 31 59.6	47.5	9.801	50.18	14 29.61	14.01	6.97	21 30 46.31
13	21 49 10.80	13.13	13 11 48.7	36.4	9.771	50.73	14 27.91	13.81	6.86	21 34 42.86
14	21 53 4.93	7.25	12 51 24.9	12.6	9.741	51.25	14 25.47	13.60	6.76	21 38 39.42
15	21 56 58.35	60.66	12 30 48.6	36.2	9.711	51.77	14 22.33	13.39	6.66	21 42 35.97
16	22 0 51.06	53.35	12 9 60.1	47.6	9.682	52.26	14 18.48	13.18	6.55	21 46 32.53
17	22 4 43.08	45.35	11 48 60.0	47.5	9.653	52.74	14 13.94	12.95	6.45	21 50 29.08
18	22 8 34.42	36.68	11 27 48.7	36.1	9.625	53.21	14 8.72	12.73	6.35	21 54 25.64
19	22 12 25.09	27.33	11 6 26.4	13.8	9.598	53.65	14 2.83	12.51	6.25	21 58 22.19
20	22 16 15.11	17.33	10 44 53.4	40.8	9.570	54.08	13 56.29	12.29	6.16	22 2 18.75
21	22 20 4.49	6.69	10 22 70.5	57.9	9.544	54.48	13 49.11	12.06	6.07	22 6 15.30
22	22 23 53.24	55.41	10 1 18.0	5.5	9.518	54.87	13 41.30	11.83	5.98	22 10 11.86
23	22 27 41.37	43.51	9 39 16.3	3.8	9.493	55.25	13 32.87	11.60	5.88	22 14 8.41
24	22 31 28.89	31.00	9 16 65.9	53.5	9.468	55.60	13 23.83	11.37	5.79	22 18 4.97
25	22 35 15.82	17.90	8 54 47.1	34.8	9.444	55.94	13 14.20	11.14	5.71	22 22 1.52
26	22 39 2.17	4.22	8 32 20.4	8.1	9.420	56.27	13 3.98	10.91	5.63	22 25 58.08
27	22 42 47.96	49.98	8 9 46.3	34.1	9.397	56.57	12 53.22	10.67	5.55	22 29 54.63
28	22 46 33.19	35.18	7 46 65.1	53.1	9.374	56.85	12 41.89	10.43	5.47	22 33 51.19
29	22 50 17.89	19.83	7 24 17.3	5.4	9.351	57.12	12 30.04	10.19	5.39	22 37 47.74
30	22 54 2.07	3.98	7 1 23.3	11.5	9.330	57.37	12 17.67	9.95	5.33	22 41 44.29
31	22 57 45.76	47.64	— 6 38 23.5	11.9	9.310	57.61	+12 4.80	16 9.71	1 5.26	22 45 40.85

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
Mar. 1	22 50 17.89	19.83	— 7 24 17.3	5.4	9.351	57.12	+12 30.04	16 10.19	1 5.39	22 37 47.74
2	22 54 2.07	3.98	7 1 23.3	11.5	9.330	57.37	12 17.67	9.95	5.33	22 41 44.29
3	22 57 45 76	47.64	6 38 23.5	11.9	9.310	57.61	12 4.80	9.71	5.26	22 45 40.85
4	23 1 28.96	30.80	6 15 18.3	6.9	9.290	57.82	11 51.45	9.46	5.19	22 49 37.40
5	23 5 11.70	13.50	5 51 68.1	56.9	9.271	58.02	11 37.63	9.21	5.13	22 53 33.96
6	23 8 54.00	55.76	5 28 53.3	42 2	9.253	58.21	11 23.38	8.96	5.07	22 57 30.51
7	23 12 35.88	37.60	5 5 34.1	23.3	9.237	58.37	11 8.71	8.71	5.01	23 1 27.06
8	23 16 17.36	19.04	4 42 11.2	0.6	9 221	58 53	10 53.63	8.46	4.95	23 5 23.62
9	23 19 58.47	60.11	4 18 44.6	34.2	9.205	58.67	10 38.19	8.19	4.90	23 9 20.17
10	23 23 39.23	40.82	3 55 14.8	4.6	9.191	58.80	10 22.40	7.93	4.85	23 13 16.72
11	23 27 19.66	21.21	3 31 42.3	32.4	9.178	58.91	10 6.27	7.67	4.80	23 17 13.28
12	23 30 59.78	61.29	3 7 67.3	57.6	9.166	59.01	9 49.84	7.40	4.76	23 21 9.83
13	23 34 39.63	41.09	2 44 29.9	20.5	9.155	59.09	9 33.13	7.13	4.72	23 25 6.39
14	23 38 19.22	20.63	2 20 50.8	41.8	9.145	59.15	9 16.17	6.86	4.68	23 29 2.94
15	23 41 58.58	59.94	1 57 10.5	1.6	9.135	59.20	8 58.99	6.59	4.64	23 32 59.49
16	23 45 37.73	39.05	1 33 28.8	20.2	9.127	59.24	8 41.58	6.31	4.60	23 36 56.05
17	23 49 16.69	17.97	1 9 46.6	38.3	9.119	59.27	8 23.99	6.03	4.58	23 40 52.60
18	23 52 55.48	56.71	0 45 63.9	55.9	9.113	59.28	8 6.22	5.75	4.56	23 44 49.16
19	23 56 34.12	35.30	— 0 22 21.0	13.3	9.107	59.28	7 48.31	5.47	4.54	23 48 45.71
20	0 0 12.63	13.77	+ 0 1 21.4	28.8	9.102	59.26	7 30.28	5.19	4.52	23 52 42.26
21	0 3 51.04	52.14	0 25 3.2	10.3	9.099	59.22	7 12.13	4.91	4.50	23 56 38 82
22	0 7 29.36	30.41	0 48 43.8	50.6	9.095	59.16	6 53.90	4.63	4.49	0 0 35.37
23	0 11 7.60	8.61	1 12 23.1	29.6	9.092	59.09	6 35.60	4.35	4.48	0 4 31.92
24	0 14 45.79	46.75	1 36 0.5	6.7	9.090	59.01	6 17.23	4.07	4.47	0 8 28.48
25	0 18 23.94	24.84	1 59 35.6	41.5	9.089	58.91	5 58.83	3.79	4.46	0 12 25.03
26	0 22 2.07	2.92	2 23 8.1	13.7	9.088	58.79	5 40.41	3.52	4.45	0 16 21.58
27	0 25 40.19	41.00	2 46 37.7	42.9	9.087	58.66	5 21.98	3.24	4.45	0 20 18.14
28	0 29 18.32	19.08	3 10 3.8	8.7	9.088	58.51	5 3.56	2.97	4.46	0 24 14.69
29	0 32 56.49	57.21	3 33 26.2	30.8	9.089	58.34	4 45.18	2.70	4.47	0 28 11.25
30	0 36 34.69	35.36	3 56 44.5	49.0	9.091	58.16	4 26.83	2.43	4.48	0 32 7.80
31	0 40 12.96	13.59	4 19 58.2	62.2	9.094	57.96	4 8.56	2.15	4.49	0 36 4.35
Apr. 1	0 43 51.31	51.89	4 43 7.0	10.7	9.098	57.75	3 50.35	1.87	4.51	0 40 0.91
2	0 47 29.76	30.30	5 6 10.7	14.1	9.103	57.53	3 32.26	1.60	4.53	0 43 57.46
3	0 51 8.33	8.82	5 29 8.9	12.0	9.109	57.30	3 14.28	1.33	4.55	0 47 54.01
4	0 54 47.04	47.48	5 52 1.1	3.9	9.116	57.04	2 56.43	1.06	4.57	0 51 50.57
5	0 58 25.91	26.32	6 14 47.1	49.6	9.123	56.78	2 38.76	0.79	4.59	0 55 47.12
6	1 2 4.95	5.31	6 37 26.6	28.8	9.131	56.50	2 21.24	0.51	4.63	0 59 43.68
7	1 5 44.19	44.51	6 59 59.2	61.1	9.139	56.21	2 3.94	16 0.24	4.66	1 3 40.23
8	1 9 23.66	23.93	7 22 24.6	26.2	9.148	55.90	1 46.86	15 59.97	4.69	1 7 36.78
9	1 13 3.37	3.59	7 44 42.7	44.1	9.158	55.58	1 30.01	59.70	4.73	1 11 33.34
10	1 16 43.33	43.52	8 6 52.9	54.0	9.170	55.25	1 13.43	59.43	4.77	1 15 29 89
11	1 20 23.58	23.74	8 28 54.9	55.8	9.183	54.90	0 57.13	59.15	4.81	1 19 26.45
12	1 24 4.14	4.26	8 50 48.7	49.3	9.196	54.55	0 41.14	58.88	4.86	1 23 23.00
13	1 27 45.02	45.09	9 12 33.7	34.1	9.209	54.19	0 25.46	58.61	4.91	1 27 19.56
14	1 31 26.24	26.27	9 34 9.6	9.7	9.224	53.80	+ 0 10.13	58.34	4.96	1 31 16.11
15	1 35 7.82	7.81	9 55 36.2	36.1	9.239	53.40	— 0 4.84	58.07	5.01	1 35 12.67
16	1 38 49.78	49.73	10 16 53 2	52.9	9.256	52.99	0 19.44	57.80	5.06	1 39 9.22
17	1 42 32.13	32.05	10 37 60.1	59.6	9.273	52.57	0 33.65	57.53	5.11	1 43 5.78
18	1 46 14.89	14.78	10 58 56.6	55.9	9.290	52.13	0 47.44	57.26	5.17	1 47 2 33
19	1 49 58.06	57.91	11 19 42.4	41.5	9.307	51.68	1 0.83	56.99	5.23	1 50 58.89
20	1 53 41.67	41.49	11 40 17.1	16.1	9.325	51.21	1 13.77	56.72	5.29	1 54 55.44
21	1 57 25.72	25.50	12 0 40.4	39.2	9.344	50.72	1 26.26	56.46	5.35	1 58 51.99
22	2 1 10.22	9.97	12 20 52.1	50.7	9.363	50.22	1 38 32	56.20	5.42	2 2 48.55
23	2 4 55.18	54.90	12 40 51.6	50.1	9.382	49.71	1 49.91	55.95	5.49	2 6 45.10
24	2 8 40.61	40.30	13 0 38.5	36.8	9.402	49.18	2 1.03	55.70	5.56	2 10 41.66
25	2 12 26.52	26 18	13 20 12.7	10.9	9.422	48.64	2 11.67	55.45	5.63	2 14 38.21
26	2 16 12.91	12.54	13 39 33.5	31.6	9.442	48.09	2 21.84	55.21	5.70	2 18 34.77
27	2 19 59.79	59.39	13 58 40.8	38.8	9.463	47.52	2 31.52	54.97	5.77	2 22 31.33
28	2 23 47.18	46.76	14 17 34.6	32.5	9.484	46.93	2 40.68	54.73	5.84	2 26 27.88
29	2 27 35.06	34.62	14 36 13.8	11.6	9.506	46.33	2 49.36	54.49	5.93	2 30 24.44
30	2 31 23.45	22.98	14 54 38.7	36.4	9.528	45.72	2 57.51	54.26	6.01	2 34 20.98
31	2 35 12.36	11.83	+15 12 48.6	46.3	9.549	45.10	— 3 5.19	15 54.03	1 6.09	2 38 17.56

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
May 1	2 35 12.36	11.83	+15 12 48.6	46.3	9.549	45.10	— 3 5.19	15 54.03	1 6.09	2 38 17.56
2	2 39 1.79	1.28	15 30 43.5	41.1	9.571	44.46	3 12.31	53.80	6.17	2 42 14.11
3	2 42 51 75	51.22	15 48 23.0	20.6	9.593	43.81	3 18.90	53.57	6.25	2 46 10.66
4	2 46 42.25	41.71	16 5 46.5	44.0	9.615	43.15	3 24.96	53.35	6.33	2 50 7.22
5	2 50 33.29	32.73	16 22 54.0	51.5	9.638	42.47	3 30.47	53.13	6.41	2 54 3.77
6	2 54 24.88	24.31	16 39 45.3	42.8	9.661	41.79	3 35.44	52.91	6.50	2 58 0.33
7	2 58 17.04	16.45	16 56 20.1	17.6	9.684	41.09	3 39.84	52.69	6.58	3 1 56.89
8	3 2 9.76	9.16	17 12 37.8	35.3	9.708	40 38	3 43.67	52.47	6.66	3 5 53.44
9	3 6 3.05	2.44	17 28 38.4	35.9	9.732	39.65	3 46.94	52.26	6.74	3 9 50.00
10	3 9 56.91	56.30	17 44 21.6	19.1	9.756	38.92	3 49.64	52.05	6.82	3 13 46.56
11	3 13 51.36	50.74	17 59 47.0	44.6	9.781	38.18	3 51.74	51.84	6.91	3 17 43.11
12	3 17 46.40	45.77	18 14 54.5	52.1	9.805	37.43	3 53.27	51.63	6.99	3 21 39.67
13	3 21 42.02	41.38	18 29 43.7	41.3	9.829	36.66	3 54.21	51.42	7.07	3 25 36.23
14	3 25 38.23	37.59	18 44 14.4	12.1	9.854	35.89	3 54.55	51.21	7.15	3 29 32.78
15	3 29 35.02	34.38	18 58 26.2	23.9	9.879	35.10	3 54.32	51.02	7.23	3 33 29.34
16	3 33 32.42	31.79	19 12 19.0	16.8	9.904	34.29	3 53.48	50.82	7.31	3 37 25.90
17	3 37 30.39	29.76	19 25 52.3	50.2	9.928	33.47	3 52.06	50.63	7.39	3 41 22.45
18	3 41 28.95	28.31	19 39 5.9	3.8	9.952	32.65	3 50.06	50.44	7.47	3 45 19.01
19	3 45 28.08	27.44	19 51 59.6	57.6	9.976	31.82	3 47.49	50.25	7.55	3 49 15.57
20	3 49 27.77	27.14	20 4 33.1	31.2	9.999	30.97	3 44.37	50.06	7.63	3 53 12.13
21	3 53 28.01	29.40	20 16 46.0	44.2	10.022	30.10	3 40.68	49.88	7.70	3 57 8.68
22	3 57 28.80	28.20	20 28 38.3	36.6	10.044	29.23	3 36.45	49.71	7.77	4 1 5.24
23	4 1 30.12	29.53	20 40 9.4	7.7	10.066	28.35	3 31.69	49.54	7.84	4 5 1.80
24	4 5 31.96	31.38	20 51 19.3	17.7	10.088	27.46	3 26.41	49.37	7.91	4 8 58.36
25	4 9 34.29	33.73	21 2 7.7	6.2	10.108	26.55	3 20.64	49.20	7.98	4 12 54.92
26	4 13 37.11	36.57	21 12 34.3	32.9	10.128	25.64	3 14.47	49.06	8.05	4 16 51.47
27	4 17 40.41	39.89	21 22 38.9	37.6	10.147	24.73	3 7.63	48.91	8.12	4 20 48.03
28	4 21 44.16	43.65	21 32 21.4	20.2	10.166	23.80	3 00.45	48.77	8.19	4 24 44.59
29	4 25 48.35	47.86	21 41 41.3	40.2	10.184	22.86	2 52.82	48.63	8.26	4 28 41.15
30	4 29 52.97	52.50	21 50 38.7	37.7	10.202	21.92	2 44.76	48.49	8.32	4 32 37.71
31	4 33 57.99	57.54	21 59 13.2	12.3	10.218	20.96	2 36.29	48.36	8.38	4 36 34.26
June 1	4 38 3.41	2.99	22 7 24.7	23.9	10.234	20.00	2 27.43	48.23	8.44	4 40 30.82
2	4 42 9.20	8.80	22 15 12.7	12.0	10.249	19.03	2 18.20	48.10	8.49	4 44 27.38
3	4 46 15.36	14.99	22 22 38.3	37.7	10.264	18.06	2 8.60	47.98	8.54	4 48 23.94
4	4 50 21.86	21.52	22 29 40.1	39.5	10.278	17.08	1 58.66	47.86	8.59	4 52 20.50
5	4 54 28.70	28.40	22 36 18.2	17.7	10.292	16.10	1 48.37	47.74	8.64	4 56 17.06
6	4 58 35.85	35.58	22 42 32.7	32.3	10.305	15.11	1 37.77	47.62	8.68	5 0 13.61
7	5 2 43.31	43.07	22 48 23.4	23.1	10.317	14.12	1 26.87	47.53	8.72	5 4 10.17
8	5 6 51.06	50.85	22 53 50.1	49.8	10.328	13.12	1 15.67	47.42	8.76	5 8 6.73
9	5 10 59.07	58.89	22 58 52.8	52.6	10.339	12.11	1 4.23	47.31	8.80	5 12 3.29
10	5 15 7.33	7.18	23 3 31.4	31.2	10.350	11.10	0 52.52	47.21	8.83	5 15 59.85
11	5 19 15.83	15.71	23 7 45.6	45.5	10.360	10.09	0 40.59	47.11	8.86	5 19 56.41
12	5 23 24.55	24.46	23 11 35.4	35.3	10.369	9.08	0 28.42	47.02	8.89	5 23 52.97
13	5 27 33.46	33.42	23 15 0.8	0.8	10.376	8.06	0 16.07	46.93	8.90	5 27 49.53
14	5 31 42.55	42.54	23 18 1.8	1.8	10.383	7.04	— 0 3.53	46.84	8.92	5 31 46.08
15	5 35 51.79	51.82	23 20 38.0	38.0	10.389	6.01	+ 0 9.15	46.76	8.94	5 35 42.64
16	5 40 1.17	1.23	23 22 49.6	49.6	10.393	4.98	0 21.97	46.68	8.95	5 39 39.20
17	5 44 10.66	10.75	23 24 36.5	36.5	10 397	3.95	0 34.90	46.61	8.96	5 43 35.76
18	5 48 20.23	20.36	23 25 58.5	58.5	10 400	2.91	0 47.91	46.54	8.97	5 47 32 32
19	5 52 29.84	30.01	23 26 55.8	55.8	10.402	1.88	1 0.97	46.47	8.98	5 51 28.88
20	5 56 39.48	39.69	23 27 28.2	28.2	10.403	0.84	1 14.04	46.42	8.98	5 55 25.44
21	6 0 49.13	49 38	23 27 35.7	35.7	10.402	0.19	1 27.14	46.36	8.97	5 59 22.00
22	6 4 58.75	59.04	23 27 18.5	18.5	10.401	1.22	1 40.20	46.31	8.96	6 3 18.56
23	6 9 8.31	8.63	23 26 36.4	36.3	10.398	2.26	1 53.22	46.27	8.95	6 7 15.11
24	6 13 17.79	18.15	23 25 29.5	29.4	10.393	3.29	2 6.14	46.24	8.94	6 11 11.67
25	6 17 27.16	27.55	23 23 57.7	57.5	10.387	4.32	2 18.95	46.23	8.92	6 15 8.23
26	6 21 36.38	36.81	23 22 1.3	1.1	10.390	5.35	2 31.61	46.21	8.90	6 19 4.79
27	6 25 45.44	45.90	23 19 40.3	40 0	10.373	6.38	2 44.11	46.19	8.88	6 23 1.35
28	6 29 54.31	54.80	23 16 54.7	54.3	10.365	7.40	2 56.42	46.17	8.86	6 26 57.91
29	6 34 2.97	3.49	23 13 44.5	44.1	10.356	8.42	3 8.53	46.15	8.84	6 30 54.47
30	6 38 11.39	11.94	23 10 9.8	9.3	10.345	9.44	3 20.39	46.15	8.80	6 34 51.03
31	6 42 19.56	20.17	+23 6 11.0	10.4	10.335	10.45	+ 3 32.01	15 46.15	1 8.77	6 38 47.58

NOTE.—For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
July 1	6 42 19.56	20.17	+23 6 11.0	10.4	10.335	10.45	+ 3 32.01	15 46.15	1 8.77	6 38 47.58
2	6 46 27.45	28.08	23 1 48.0	47.3	10.323	11.46	3 43.34	46.16	8.73	6 42 44.14
3	6 50 35 04	35.71	22 57 0.9	0.1	10.310	12.46	3 54.37	46.17	8.69	6 46 40.70
4	6 54 42.32	33.02	22 51 49.8	48.9	10.296	13.45	4 5.09	46.17	8.65	6 50 37.26
5	6 58 49.27	50.00	22 46 15.0	14.0	10.282	14.44	4 15.48	46.19	8.60	6 54 33.82
6	7 2 55.87	56.63	22 40 16.6	15.5	10.267	15.43	4 25.52	46.21	8.55	6 58 30.38
7	7 7 2.11	2.90	22 33 54.4	53.1	10.252	16.41	4 35.20	46.23	8.50	7 2 26.94
8	7 11 7.98	8.79	22 27 9.0	7.6	10.236	17.38	4 44.51	46.25	8.45	7 6 23.50
9	7 15 13.45	14.28	22 19 60.3	58.8	10.219	18.35	4 53.43	46.27	8.40	7 10 20.05
10	7 19 18.53	19.38	22 12 28.4	26.8	10.202	19.30	5 1.95	46.29	8.34	7 14 16.61
11	7 23 23.19	14.07	22 4 33.7	32.0	10.185	20.25	5 10.05	46.33	8.28	7 18 13.17
12	7 27 27.42	28.32	21 56 16.2	14.3	10.167	21.20	5 17.72	46.37	8.22	7 22 9.73
13	7 31 31.20	32.12	21 47 36.1	34.1	10.148	22.14	5 24.94	46.41	8.15	7 26 6.29
14	7 35 34.53	35.47	21 38 33.7	31.6	10.129	23.07	5 31.71	46.46	8.08	7 30 2.85
15	7 39 37.39	38.34	21 29 8.9	6.7	10.109	23.99	5 38.00	46.52	8.01	7 33 59.40
16	7 43 39.77	40.73	21 19 22.2	19.8	10.088	24.90	5 43.83	46.58	7.94	7 37 55.96
17	7 47 41.64	42.61	21 9 13.6	11.1	10.067	25.80	5 49.14	46.64	7.87	7 41 52.52
18	7 51 43.01	44.00	20 58 43.6	41.0	10.046	26.70	5 53.95	46.70	7.78	7 45 49.08
19	7 55 43.84	44.84	20 47 51.9	49.2	10.024	25.59	5 58.22	46.76	7.70	7 49 45.64
20	7 59 44.14	45.14	20 36 39.2	36.3	9.999	28.46	6 1.98	46.83	7.61	7 53 42.19
21	8 3 43.88	44.89	20 25 5.8	2.8	9.977	29.32	6 5.14	46.92	7.53	7 57 38.75
22	8 7 43.06	44.08	20 13 11.8	8.7	9.954	30.18	6 7.76	47.01	7.45	8 1 35.31
23	8 11 41.66	42.69	20 0 57.3	54.1	9.930	31.02	6 9.80	47.10	7.37	8 5 31.87
24	8 15 39.67	40.69	19 48 22.8	19.5	9.906	31.85	6 11.26	47.20	7.29	8 9 28.42
25	8 19 37.09	38.11	19 35 28.5	25.1	9.882	32.66	6 12.11	47.31	7.21	8 13 24.98
26	8 23 33.90	34.92	19 22 14.7	11.2	9.855	33.47	6 12.36	47.42	7.13	8 17 21.54
27	8 27 30.10	31.12	19 8 41.9	38.4	9.829	34.27	6 11.99	47.53	7.05	8 21 18.11
28	8 31 25.68	26.70	18 54 50 0	46.4	9.803	35.05	6 11.03	47.64	6.97	8 25 14.65
29	8 35 20.65	21.65	18 40 39.4	35.7	9.777	35.82	6 9.43	47.76	6.88	8 29 11.21
30	8 39 14.99	15.99	18 26 10.4	6.7	9.751	36.58	6 7.21	47.90	6.80	8 33 7.77
31	8 43 8.70	9.69	18 11 23.6	19.8	9.725	37.33	6 4.36	48.03	6.72	8 37 4.33
Aug. 1	8 47 1.80	2.78	17 56 18.9	15.1	9.699	38.06	6 0.91	48.16	6.63	8 41 0.88
2	8 50 54.28	55.24	17 40 56.7	52.9	9 674	38.78	5 56.82	48.29	6.54	8 44 57.44
3	8 54 46.15	47.09	17 25 17.3	13 5	9.649	39.49	5 52.14	48 43	6.45	8 48 53.99
4	8 58 37.43	38.36	17 9 21.0	17.1	9.624	40.19	5 46.86	48.57	6.36	8 52 50.55
5	9 2 28.09	29.00	16 53 8.0	4.1	9.599	40.88	5 40 96	48.71	6.27	8 56 47.11
6	9 6 18.15	19.03	16 36 38.7	34.9	9.574	41.55	5 34.46	48.86	6.18	9 0 43.66
7	9 10 7.64	8.50	16 19 53.3	49.5	9.550	42.22	5 27.39	49.01	6.10	9 4 40.22
8	9 13 56.54	57.38	16 2 52.0	48.2	9.526	42.87	5 19.73	49.16	6.01	9 8 36.78
9	9 17 44.88	45.70	15 45 35.2	31.4	9.502	43.51	5 11.52	49.33	5.92	9 12 33.33
10	9 21 32.66	43.46	15 27 63.1	59.4	9.479	44.14	5 2.74	49.49	5.84	9 16 29 89
11	9 25 19.89	20.66	15 10 16.2	12.6	9.456	44.76	4 53.41	49.65	5.76	9 20 26.45
12	9 29 6.57	7.31	14 52 14.4	10.8	9.433	45.37	4 43.54	49.81	5.68	9 24 23.00
13	9 32 52.72	53.44	14 33 58.3	54.8	9.411	45.96	4 33.13	49.98	5.60	9 28 19.56
14	9 36 38.34	39.03	14 15 28.1	24.7	9.389	46.54	4 22.19	50.15	5.52	9 32 16.12
15	9 40 23.44	24.10	13 56 44.2	40.9	9.368	47.11	4 10.74	50.32	5.44	9 36 12.67
16	9 44 8.03	8.65	13 37 46.9	43.8	9.347	47.66	3 58.78	50.50	5.36	9 40 9.22
17	9 47 52.11	52.70	13 18 36.5	33.5	9 326	48.21	3 46.30	50.68	5.30	9 44 5.78
18	9 51 35.70	36.25	12 59 13.2	10.3	9.306	48.73	3 33.33	50.87	5.23	9 48 2.34
19	9 55 18.80	19.31	12 39 37.4	34.7	9.286	49.24	3 19.88	51.06	5.16	9 51 58.89
20	9 59 1.43	1.91	12 19 49.7	47.2	9.266	49.74	3 5.95	51.26	5.09	9 55 55.45
21	10 2 43.58	44.02	11 59 50.3	47.9	9.246	50.22	2 51.55	51.46	5.02	10 59 52.00
22	10 6 25.26	25.66	11 39 39.3	37.1	9.228	50.69	2 36.67	51.66	4.95	10 3 48.56
23	10 10 6.49	6.86	11 19 17.2	15.2	9.209	51.14	2 21.35	51.87	4.89	10 7 45.11
24	10 13 47.29	47.62	10 58 44.5	42.7	9.191	51.58	2 5.60	52.10	4.83	10 11 41.67
25	10 17 27 65	27.93	10 37 61.4	59.9	9.173	52.00	1 49.41	52.32	4.77	10 15 38.22
26	10 21 7.59	7.82	10 17 8.3	7.0	9.156	52.42	1 32.79	52.54	4.71	10 19 34.78
27	10 24 47.14	47.33	9 56 5.5	4.4	9.140	52.81	1 15.79	52.76	4.65	10 23 31.33
28	10 28 26.29	26.44	9 34 53.2	52.4	9.124	53.19	0 58.40	52.98	4.60	10 27 27.88
29	10 32 5.07	5.19	9 13 32.1	31.5	9.109	53.57	0 40.62	53.21	4.55	10 31 24.44
30	10 35 43.50	43.56	8 52 1.9	1.6	9.094	53.93	0 22.51	53.44	4.50	10 35 20.99
31	10 39 21.59	21.60	+ 8 30 23.4	23.4	9.080	54.27	+ 0 4.04	15 53.67	1 4.45	10 39 17.55

NOTE. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
Sept. 1	10 42 59.36	59.32	+ 8 8 37.0	37.2	9.067	54.60	— 0 14.74	15 33.91	1 4.40	10 43 14.10
2	10 46 36.84	36.76	7 46 42.7	43.2	9.055	54.92	0 33.82	54.15	4.36	10 47 10.66
3	10 50 14.04	13.91	7 24 40.8	41.6	9.044	55.22	0 53.16	54.39	4.32	10 51 7.21
4	10 53 50.98	50.79	7 2 31.7	32.8	9.034	55.52	1 12.77	54.63	4.28	10 55 3.77
5	10 57 27.70	27.47	6 40 15.7	17.2	9.025	55.81	1 32.60	54.87	4.25	10 59 0.32
6	11 1 4.20	3.92	6 17 53.1	54.9	9.016	56.08	1 52.65	55.11	4.22	11 2 56.87
7	11 4 40.50	40.16	5 55 24.0	26.1	9.009	56.33	2 12.90	55.35	4.19	11 6 53.43
8	11 8 16.64	16.25	5 32 49.0	51.4	9.003	56 58	2 33.31	55.59	4.16	11 10 49.98
9	11 11 52.63	52.19	5 10 8.3	11.1	8.997	56.81	2 53.87	55.84	4.15	11 14 46.54
10	11 15 28.49	28.00	4 47 22.2	25.3	8.992	57.03	3 14.56	56.09	4.13	11 18 42.09
11	11 19 4.24	3.70	4 24 31.0	34.4	8.988	57.23	3 35.35	56.34	4.11	11 22 39.64
12	11 22 39.90	39.31	4 1 35.0	38.8	8.985	57.43	3 56.24	56.59	4.09	11 26 36.20
13	11 26 15.48	14.83	3 38 34.6	38.7	8.982	57.60	4 17.21	56.84	4.08	11 30 32.75
14	11 29 51.01	50.31	3 15 30.1	34.6	8.980	57.76	4 38.24	57.09	4.07	11 34 29.31
15	11 33 26.52	25.77	2 52 21.8	26.6	8.979	57.91	4 59.27	57.35	4.06	11 38 25.86
16	11 37 2.00	1.20	2 29 10.1	15.3	8.979	58.05	5 20.34	57.62	4.06	11 42 22.41
17	11 40 37.49	36.64	2 5 55.5	61.0	8.979	58.16	5 41.40	57.86	4 06	11 46 18.97
18	11 44 12.99	12.08	1 42 38.0	43.9	8.980	58.27	6 2.45	58.14	4.06	11 50 15.52
19	11 47 48.51	47.55	1 19 18.6	24.8	8.981	58.36	6 23.47	58.41	4.06	11 54 12.07
20	11 51 24.09	23.08	0 55 56.9	63.5	8.982	58.42	6 44.45	58.71	4.07	11 58 8.63
21	11 54 59.74	58.68	0 32 33.9	40.8	8.986	58.48	7 5.34	58.98	4.08	12 2 5 18
22	11 58 35.47	34.36	+ 0 9 9.8	17.1	8.990	58.52	7 26.17	59.25	4.09	12 6 1.74
23	12 2 11 31	10.14	— 0 14 15.4	7.8	8.995	58.55	7 46.88	59.50	4.11	12 9 58.29
24	12 5 47.27	46.05	0 37 40.9	32.9	9.000	58.56	8 7.46	15 59.78	4.13	12 13 54.84
25	12 9 23.37	22.10	1 0 66.6	58.3	9.007	58.56	8 27.91	16 0.06	4.17	12 17 51.40
26	12 12 59.62	58.30	1 24 31.9	23.3	9.014	58.55	8 48.21	0.34	4.20	12 21 47.95
27	12 16 36.04	34.67	1 47 56.8	47.9	9.021	58.52	9 8.33	0.62	4.23	12 25 44.50
28	12 20 12.67	11.24	2 11 20.7	11.5	9.029	58.47	9 28.26	0.90	4.27	12 29 41.06
29	12 23 49.53	48.05	2 34 43.3	33.7	9.039	58.40	9 47.95	1.18	4.31	12 33 37.61
30	12 27 26.63	25.10	2 57 64.3	54.4	9.050	58.33	10 7.41	1.46	4.35	12 37 34.17
Oct. 1	12 31 4.00	2.43	3 21 23.4	13.2	9.062	58.25	10 26.58	1.74	4.39	12 41 30.72
2	12 34 41.66	40.03	3 44 40.2	29 8	9.075	58.15	10 45.47	2.02	4.43	12 45 27.27
3	12 38 19.64	17.96	4 7 54.4	43.7	9.088	58.03	11 4.05	2.29	4.48	12 49 23.83
4	12 41 57.96	56.23	4 30 65.7	54.7	9.103	57.90	11 22.28	2.56	4.53	12 53 20.38
5	12 45 36.64	34.86	4 54 13.8	2.6	9.119	57.76	11 40.15	2.84	4.58	12 57 16.93
6	12 49 15.70	13.87	5 17 18.3	6.8	9.136	57.60	11 57.65	3.12	4.64	13 1 13.49
7	12 52 55.17	53.30	5 40 18.9	7.2	9.153	57.43	12 14.73	3.40	4.70	13 5 10.04
8	12 56 35.07	33.16	6 3 15.3	3.4	9.171	57.25	12 31.39	3.68	4.76	13 9 6.60
9	13 0 15.43	13.47	6 25 66.9	54.7	9.190	57.04	12 47.58	3.96	4.83	13 13 3.15
10	13 3 56.26	54.26	6 48 53.5	41.1	9.211	56.83	13 3.30	4.24	4.90	13 16 59.70
11	13 7 37.59	35.55	7 11 34.9	22.3	9.232	56.60	13 18.53	4.51	4.97	13 20 56 26
12	13 11 19.43	17.34	7 33 70.5	57.8	9.254	56.35	13 33.24	4.78	5.04	13 24 52.81
13	13 14 61.80	59.67	7 56 40.0	27.1	9.276	56.09	13 47.44	5.05	5.13	13 28 49.37
14	13 18 44.71	42.54	8 18 62.9	49.9	9.299	55.81	14 1.08	5.32	5.21	13 32 45.92
15	13 22 28.19	25.98	8 41 18.9	5.7	9.323	55.51	14 14.15	5.59	5.29	13 36 42.48
16	13 26 12.25	10.00	9 3 27.6	14.3	9.347	55.20	14 26.65	5.86	5.37	13 40 39.03
17	13 29 .56.90	54.61	9 25 28.5	15.1	9.372	54.87	14 38.56	6.12	5.46	13 44 35.58
18	13 33 42.15	39.83	9 47 21.3	7.8	9.398	54.51	14 49.87	6.39	5.55	13 48 32.14
19	13 37 28.03	25.68	10 8 65.4	51.9	9.424	54.15	15 0.55	6.66	5.64	13 52 28.69
20	13 41 14.54	12.16	10 30 40.5	26.9	9.450	53.76	15 10.60	6.93	5.73	13 56 25 25
21	13 45 1.69	59.28	10 51 66.2	52.6	9.477	53.36	15 20.01	7.20	5.83	14 0 21.80
22	13 48 49.50	47.06	11 13 22.1	8.4	9.505	52.94	15 28.76	7.46	5.93	14 4 18.36
23	13 52 37.97	35.50	11 34 27.7	14.0	9.533	52.50	15 36.86	7.73	6.03	14 8 14.91
24	13 56 27.13	24.63	11 55 22.5	8.8	9.562	52.05	15 44.26	8.00	6.13	14 12 11.47
25	14 0 16.98	14.45	12 15 66.5	52.9	9.591	51.59	15 50.97	8.27	6.23	14 16 8.02
26	14 4 7.54	4 99	12 36 38.9	25.3	9.621	51.10	15 56.98	8.53	6.33	14 20 4.58
27	14 7 58.82	56.24	12 56 59.5	46.0	9.651	50.60	16 2.26	8.79	6.44	14 24 1.13
28	14 11 50.83	48.23	13 16 67.7	54 3	9.682	50.07	16 6.82	9.05	6.55	14 27 57.69
29	14 15 43.59	40.97	13 36 63.5	50.1	9.713	49.54	16 10.61	9.31	6.66	14 31 54.24
30	14 19 37.11	34.47	13 56 46.2	33.0	9.745	49.00	16 13.67	9.57	6.77	14 35 50.80
31	14 23 31.40	28.75	14 16 15.5	2.4	9.778	48.44	16 15.94	9.83	6.88	14 39 47.36
32	14 27 26.48	23.80	—14 35 30.9	17.9	9.811	47.85	—16 17.43	16 10.07	1 7.00	14 43 43.91

Note. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semidiameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
	h. m. s.	s.	° ′ ″	″	s.	″	m. s.	′ ″	m. s.	h. m. s.
Nov. 1	14 27 26.48	23.80	—14 35 30.9	17.9	9.811	47.85	—16 17.43	16 10.07	1 7.00	14 43 43.91
2	14 31 22.37	19.68	14 54 32.4	19.6	9.848	47.25	16 18.11	10.31	7.11	14 47 40.47
3	14 35 19.07	16.37	15 13 19.2	6.5	9.880	46.64	16 17.97	10.55	7.23	14 51 37.02
4	14 39 16.59	13.89	15 31 51.2	38.7	9.915	46.01	16 17.01	10.79	7.35	14 55 33.58
5	14 43 14.94	12.23	15 49 67.7	55.4	9.949	45.37	16 15.23	11.03	7.47	14 59 30.13
6	14 47 14.15	11.43	16 7 68.7	56.6	9.984	44.70	16 12.59	11.27	7.59	15 3 26.69
7	14 51 14.20	11.49	16 25 53.6	41.8	10.020	44.02	16 9.10	11.50	7.70	15 7 23.25
8	14 55 15.11	12.41	16 43 21.9	10.3	10.056	43.33	16 4.75	11.72	7.82	15 11 19.80
9	14 59 16.88	14.18	17 0 33.2	21.9	10.092	42.61	15 59.55	11.94	7.94	15 15 16.36
10	15 3 19.53	16.84	17 17 27.3	16.2	10.129	41.88	15 53.47	12.16	8.06	15 19 12.92
11	15 7 23.04	20.36	17 33 63.7	52.9	10.165	41.14	15 46.52	12.38	8.18	15 23 9.47
12	15 11 27.42	24.75	17 50 21.9	11.4	10.201	40.37	15 38.70	12.58	8.29	15 27 6.02
13	15 15 32.66	30.01	18 6 21.5	11.3	10.237	39.59	15 30.01	12.79	8.41	15 31 2.59
14	15 19 38.78	36.16	18 21 62.0	52.1	10.273	38.79	15 20.47	13.00	8.53	15 34 59.14
15	15 23 45.74	43.13	18 37 23.2	13.6	10.308	37.97	15 10.08	13.21	8.65	15 38 55.70
16	15 27 53.54	50.95	18 52 24.6	15.4	10.343	37.14	14 58.84	13.41	8.77	15 42 52.26
17	15 31 62.19	59.62	19 6 65.8	56.9	10.378	36.26	14 46.75	13.61	8 89	15 46 48.81
18	15 36 11.66	9.12	19 21 26.3	17.7	10.412	35.41	14 33.85	13.81	9.01	15 50 45.37
19	15 40 21.95	19.45	19 35 25.7	17.5	10.446	34.53	14 20.13	14.01	9.12	15 54 41.93
20	15 44 33.05	30.58	19 48 63.9	56.0	10.479	33.63	14 5.59	14.21	9.23	15 58 38.49
21	15 48 44.94	42.50	20 2 20.3	12.8	10.512	32.72	13 50.26	14.41	9.34	16 2 35 04
22	15 52 57.61	55.22	20 15 14.5	7.3	10.544	31.79	13 34.15	14.60	9.45	16 6 31.60
23	15 57 11.05	8.70	20 27 46.1	39.3	10.576	30.84	13 17.27	14.79	9.56	16 10 28.16
24	16 1 25.24	22.94	20 39 55.2	48.8	10.607	29.89	12 59.64	14.97	9.67	16 14 24.72
25	16 5 40.17	37.92	20 51 41.0	34.9	10.637	28.92	12 41.27	15.15	9.78	16 18 21.27
26	16 9 55.83	53.63	21 2 63.3	57.6	10.667	27.94	12 22.17	15.33	9.88	16 22 17.83
27	16 14 12.20	10.06	21 13 61.8	56.4	10.697	26.94	12 2.36	15.50	9.98	16 26 14.39
28	16 18 29.26	27.17	21 24 36.3	31.3	10.726	25.93	11 41.86	15.66	10.08	16 30 10.95
29	16 22 47.00	44.97	21 34 46.5	41.8	10.754	24.92	11 20.68	15.82	10.17	16 34 7.51
30	16 27 5.40	3.43	21 44 32.0	27.7	10.781	23.89	10 58.83	15.98	10.26	16 38 4.06
Dec. 1	16 31 24.45	22.54	21 53 52.5	48.5	10.808	22.84	10 36.34	16.14	10.35	16 42 0.62
2	16 35 44.15	42.30	22 2 47.8	44.1	10.834	21.77	10 13.20	16.28	10.43	16 45 57.18
3	16 40 4.44	2.67	22 11 17.6	14.2	10.859	20.70	9 49.46	16.42	10.51	16 49 53.74
4	16 44 25.33	2363	22 19 21.8	18.7	10.883	19.63	9 25.12	16.55	10.59	16 53 50.30
5	16 48 46.80	45.17	22 26 60.0	57.2	10.907	18.55	9 0.21	16.68	10.67	16 57 46.86
6	16 53 8.82	7.26	22 34 11.9	9.4	10.930	17.45	8 34.74	16.80	10.73	17 1 43.42
7	16 57 31.37	29.89	22 40 57.4	55.2	10.951	16.35	8 8.74	16.90	10.79	17 5 39.97
8	17 1 54.43	53.03	22 47 16.3	14.4	10.971	15.23	7 42.24	17.00	10.85	17 9 36.54
9	17 6 17.95	16.63	22 53 8.3	6.6	10.990	14.11	7 15.27	17.12	10.91	17 13 33.09
10	17 10 41.92	40.68	22 58 33.2	31.7	11.009	12.97	6 47.85	17.22	10.97	17 17 29.65
11	17 15 6.31	5.15	23 3 30.8	29.6	11.025	11.83	6 20.01	17.32	11.03	17 21 26.21
12	17 19 31.08	30.00	23 7 60.8	59.8	11.040	10.69	5 51.79	17.41	11.05	17 25 22.77
13	17 23 56.20	55.21	23 12 3.4	2.6	11.054	9.54	5 23.23	17.50	11.11	17 29 19.33
14	17 28 21.63	20.73	23 15 38.1	37.4	11.066	8 37	4 54.35	17.59	11.15	17 33 15.89
15	17 32 47.34	46.53	23 18 45.1	44.6	11.077	7.20	4 25.19	17.68	11.19	17 37 12.45
16	17 37 13.29	12.57	23 21 24.0	23.6	11.087	6.03	3 55.78	17.76	11.22	17 41 9.00
17	17 41 39.44	38.82	23 23 34.6	34.3	11.094	4.86	3 26.18	17.83	11.23	17 45 5.56
18	17 46 5.75	5.22	23 25 17.3	17.1	11.100	3.69	2 56.42	17.90	11.25	17 49 2.12
19	17 50 32.19	31.75	23 26 31.6	31.5	11.104	2.51	2 26.53	17.97	11.27	17 52 58.68
20	17 54 58.73	58.38	23 27 17.6	17.6	11.108	1.33	1 56.54	18.04	11.29	17 56 55 24
21	17 59 25.31	25.05	23 27 35.3	35.3	11.110	0.15	1 26.51	18.11	11.30	18 0 51.80
22	18 3 51.89	51.72	23 27 24.7	24.7	11.109	1.03	0 56.48	18.16	11.30	18 4 48 36
23	18 8 18.46	18.39	23 26 45.9	45.9	11.106	2.21	— 0 26.46	18.21	11.30	18 8 44.92
24	18 12 44.97	44.99	23 25 38.7	38.7	11.102	3.39	+ 0 3.50	18.26	11.29	18 12 41.48
25	18 17 11.39	11.50	23 24 3.1	3.1	11.097	4.56	0 33.37	18.30	11.28	18 16 38.04
26	18 21 37.68	37.88	23 21 59.6	59.5	11.091	5.73	1 3.12	18.33	11.27	18 20 34.59
27	18 26 3.81	4 09	23 19 27.9	27.7	11.084	6.90	1 32.70	18.34	11.24	18 24 31.15
28	18 30 29.76	30.13	23 16 28.1	27.8	11.077	8.06	2 2.10	18.36	11.20	18 28 27.71
29	18 34 55.49	55.95	23 12 60.3	59.9	11.067	9.23	2 31.28	18.38	11.17	18 32 24.27
30	18 39 20.98	21.53	23 9 4.7	4.2	11.056	10.39	3 0.22	18.40	11.14	18 36 20.83
31	18 43 46.20	46.85	23 4 41.4	40.7	11.044	11.54	3 28.89	18.40	11.11	18 40 17.39
32	18 48 11.11	11.85	—22 59 50.5	49.7	11.031	12.69	+ 3 57.25	16 18.40	1 11.07	18 44 13.95

Note. — For *Mean* Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

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Mean Solar Date.	Sidereal Date.	Limb and Transit.	Apparent Right Ascension in Time.	Logarithm Variation of Moon's Right Ascension for 1 hour of Longitude.	Sidereal Time of Semi-diameter passing the Meridian.	Declination.	Logarithm Variation of Moon's Declination for 1 hour of Longitude.
	d.		h. m. s.		s.	° ′ ″	
Jan. 1	0	I. U.	23 27 47.84	2.10575	66.58	— 5 12 50.8	+3.00539
1	1	I. L.	23 53 15.88	2.10449	66.45	— 1 48 23.4	+3.01275
2	2	I. U.	0 18 44.09	2.10622	66.59	+ 1 38 15.5	+3.01465
2	2	I. L.	0 44 23.46	2.11106	66.98	+ 5 4 31.4	+3.01115
3	3	I. U.	1 10 25.06	2.11883	67.60	+ 8 27 44.1	+3.00165
3	3	I. L.	1 36 59.72	2.12930	68.45	+11 45 5.8	+2.98561
4	4	I. U.	2 4 17.59	2.14208	69.46	+14 53 38.5	+2.96161
4	4	I. L.	2 32 27.42	2.15646	70.64	+17 50 12.6	+2.92809
5	5	I. U.	3 1 35.76	2.17164	71.89	+20 31 28.7	+2.88224
5	5	I. L.	3 31 45.83	2.18645	73.16	+22 54 2.8	+2.81981
6	6	I. U.	4 2 56.47	2.19986	74.30	+24 54 32.5	+2.73392
6	6	I. L.	4 35 1.04	2.21069	75.24	+26 29 52.0	+2.61183
7	7	I. U.	5 7 47.13	2.21793	75.87	+27 37 26.1	+2.42357
7	7	I. L.	5 40 57.03	2.22074	76.10	+28 15 28.5	+2.05956
8	8	I. U.	6 14 9.35	2.21861	75.89	+28 23 14.0	—1.56348
8	8	I. L.	6 47 1.61	2.21163	75.25	+28 1 5.4	—2.26364
9	9	I. U.	7 19 13.01	2.20017	74.21	+27 10 31.3	—2.50556
10	9	II. L.	7 52 52.44	2.18509	72.91	+25 53 54.6	—2.64670
10	10	II. U.	8 22 53 83	2.16744	71.40	+24 14 14.3	—2.74076
11	10	II. L.	8 51 40.00	2.14823	69.80	+22 14 48.1	—2.80672
11	11	II. U.	9 19 10.31	2.12856	68.22	+19 58 58.7	—2.85400
12	11	II. L.	9 45 28.09	2.10931	66.71	+17 29 57.4	—2.88812
12	12	II. U.	10 10 39.47	2.09132	65.32	+14 50 40.7	—2.91243
13	12	II. L.	10 34 52.40	2.07518	64.09	+12 3 46.3	—2.92921
13	13	II. U.	10 58 15.89	2.06134	63.08	+ 9 11 31.7	—2.94007
14	13	II. L.	11 20 59.41	2.05011	62.28	+ 6 15 55.7	—2.94611
14	14	II. U.	11 43 12.57	2.04179	61.70	+ 3 18 41.7	—2.94822
15	15	II. L.	12 5 4.92	2.03647	61.33	+ 0 21 20.2	—2.94680
15	15	II. U.	12 26 45.90	2.03423	61.19	— 2 34 48.0	—2.94221
16	16	II. L.	12 48 24.77	2.03503	61.27	— 5 28 28.6	—2.93455
16	16	II. U.	13 10 10.62	2.03882	61.57	— 8 18 29.9	—2.92371
17	17	II. L.	13 32 12.31	2.04544	62.06	—11 3 39.3	—2.90934
17	17	II. U.	13 54 38.50	2.05473	62.72	—13 42 42.7	—2.89087
18	18	II. L.	14 17 37.57	2.06633	63.58	—16 14 18.7	—2.86747
18	18	II. U.	14 41 17.38	2.07990	64.61	—18 36 57.5	—2.83771
19	19	II. L.	15 5 44.95	2.09496	65.75	—20 48 59.0	—2.79975
19	19	II. U.	15 31 6.12	2.11096	67.00	—22 48 32.1	—2.75066
20	20	II. L.	15 57 24.98	2.12717	68.27	—24 33 34.7	—2.68601
20	20	II. U.	16 24 43.17	2.14286	69.50	—26 1 54.8	—2.59791
21	21	II. L.	16 52 59.39	2.15728	70.65	—27 11 17.4	—2.47070
21	21	II. U.	17 22 8.76	2.16959	71.66	—27 59 29.9	—2.26600
22	22	II. L.	17 52 2.67	2.17906	72.45	—28 24 31.7	—1.80754
22	22	II. U.	18 22 29.11	2.18515	72.98	—28 24 45.8	+1.79927
23	23	II. L.	18 53 13.58	2.18761	73.18	—27 59 7.5	+2.28735
23	23	II. U.	19 24 0.52	2.18639	73.05	—27 7 13.7	+2.51148
24	24	II. L.	19 54 35.01	2.18179	72.63	—25 49 26.4	+2.65523
25	24	II. U.	20 24 44.30	2.17444	71.99	—24 6 52.1	+2.75762
25	25	I. L.	20 51 56.60	2.16518	71.19	—22 1 15.6	+2.83391
26	25	I. U.	21 20 52.81	2.15470	70.32	—19 34 53.6	+2.89170
26	26	I. L.	21 49 7.13	2.14404	69.45	—16 50 25.0	+2.93596

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	d.		h. m. s.		s.	° ′ ″	
Jan. 27	26	I. U.	22 16 41.14	2.13402	68.65	—13 50 41.8	+2.96928
27	27	I. L.	22 43 39.44	2.12532	67.97	—10 38 44.0	+2.99366
28	27	I. U.	23 10 8.75	2.11856	67.44	— 7 17 32.9	+3.01026
28	28	I. L.	23 36 17.40	2.11421	67.13	— 3 50 8.8	+3.02020
29	29	I. U.	0 2 14.85	2.11261	67.04	— 0 19 30.0	+3.02391
29	29	I. L.	0 28 11.26	2.11388	67.17	+ 3 11 28.4	+3.02160
30	30	I. U.	0 54 17.03	2.11803	67.54	+ 6 39 53.9	+3.01326
30	30	I. L.	1 20 42.52	2.12496	68.12	+10 2 53.2	+2.99848
31	31	I. U.	1 47 37.70	2.13427	68.88	+13 17 32.5	+2.97658
31	31	I. L.	2 15 11.52	2.14551	69.81	+16 20 55.4	+2.94630
Feb. 1	32	I. U.	2 43 31.29	2.15806	70.88	+19 10 2.8	+2.90580
1	32	I. L.	3 12 42.11	2.17108	71.97	+21 41 55.6	+2.85217
2	33	I. U.	3 42 45.59	2.18361	73.05	+23 53 37.0	+2.78053
2	33	I. L.	4 13 39.35	2.19463	74.01	+25 42 20.2	+2.68287
3	34	I. U.	4 45 16.24	2.20317	74.75	+27 5 38.5	+2.54332
3	34	I. L.	5 17 24.25	2.20836	75.19	+28 1 36.8	+2.32056
4	35	I. U.	5 49 47.38	2.20957	75.26	+28 29 3.6	+1.81291
4	35	I. L.	6 22 7.00	2.20648	74.96	+28 27 39.2	—1.89542
5	36	I. U.	6 54 4.15	2.19915	74.26	+27 57 58.8	—2.33646
5	36	I. L.	7 25 21.51	2.18811	73.26	+27 1 30.8	—2.53908
6	37	I. U.	7 55 45.33	2.17397	72.00	+25 40 24.6	—2.66539
6	37	I. L.	8 25 6.33	2.15758	70.59	+23 57 21.4	—2.75228
7	38	I. U.	8 53 19.80	2.13997	69.11	+21 55 17.8	—2.81471
8	38	I. L.	9 20 25.28	2.12202	67.65	+19 37 15.4	—2.86040
8	39	II. U.	9 48 38.15	2.10459	66.27	+17 6 11.1	—2.89387
9	39	II. L.	10 13 36.09	2.08828	65.01	+14 24 50.3	—2.91808
9	40	II. U.	10 37 41.49	2.07361	63.90	+11 35 45.9	—2.93490
10	40	II. L.	11 1 2.28	2.06108	62.96	+ 8 41 15.1	—2.94576
10	41	II. U.	11 23 47.02	2.05100	62.23	+ 5 43 20.0	—2.95173
11	41	II. L.	11 46 4.42	2.04356	61.71	+ 2 43 50.5	—2.95357
11	42	II. U.	12 8 3.24	2.03890	61.41	— 0 15 35.6	—2.95158
12	43	II. L.	12 29 52.12	2.03703	61.31	— 3 13 28.3	—2.94606
12	43	II. U.	12 51 39.62	2.03794	61.41	— 6 8 25.1	—2.93712
13	44	II. L.	13 13 34.08	2.04159	61.70	— 8 59 7.1	—2.92464
13	44	II. U.	13 35 43.76	2.04786	62.19	—11 44 16.5	—2.90832
14	45	II. L.	13 58 16.66	2.05660	62.85	—14 22 34.5	—2.88767
14	45	II. U.	14 21 20.49	2.06748	63.69	—16 52 39.1	—2.86177
15	46	II. L.	14 45 2.38	2.08012	64.68	—19 13 1.9	—2.82930
15	46	II. U.	15 9 28.77	2.09412	65.78	—21 22 7.6	—2.78852
16	47	II. L.	15 34 44.95	2.10900	66.96	—23 18 12.2	—2.73632
16	47	II. U.	16 0 54.58	2.12415	68.17	—24 59 23.8	—2.66792
17	48	II. L.	16 27 59.27	2.13884	69.36	—26 23 43.5	—2.57530
17	48	II. U.	16 55 57.92	2.15238	70.48	—27 29 9.4	—2.44185
18	49	II. L.	17 24 46.37	2.16411	71.46	—28 13 41.8	—2.22350
18	49	II. U.	17 54 17.29	2.17339	72.23	—28 35 29.7	—1.69373
19	50	II. L.	18 24 20.36	2.17972	72.75	—28 33 1.9	+1.87564
19	50	II. U.	18 54 43.17	2.18284	72.99	—28 5 12.8	+2.30856
20	51	II. L.	19 25 12.20	2.18270	72.94	—27 11 31.8	+2.52270
20	51	II. U.	19 55 34.28	2.17958	72.65	—25 52 5.8	+2.66332
21	52	II. L.	20 25 38.10	2.17400	72.16	—24 7 42.9	+2.76500

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	d.		h. m. s.		s.	° ′ ″	
Feb. 21	52	II. U.	20 55 14.88	2.16664	71.50	—21 59 47.4	+2.84217
22	53	II. L.	21 24 19.30	2.15821	70.73	—19 30 17.2	+2.90173
22	53	II. U.	21 52 49.52	2.14959	69.97	—16 41 37.3	+2.94778
23	54	II. L.	22 20 46.84	2.14148	69.29	—13 36 34.2	+2.98281
24	54	I. U.	22 45 57.85	2.13462	68.73	—10 18 9.9	+3.00869
24	55	I. L.	23 13 4.50	2.12959	68.33	— 6 49 36.7	+3.02633
25	55	I. U.	23 39 56.04	2.12675	68.10	— 3 14 14.8	+3.03671
25	56	I. L.	0 6 41.25	2.12642	68.10	+ 0 24 32.2	+3.04009
26	57	I. U.	0 33 29.75	2.12872	68.32	+ 4 3 18.1	+3.03663
26	57	I. L.	1 0 31.35	2.13363	68.75	+ 7 38 36.1	+3.02617
27	58	I. U.	1 27 55.51	2.14088	69.38	+11 7 0.6	+3.00822
27	58	I. L.	1 55 51.06	2.15008	70.18	+14 25 7.2	+2.98191
28	59	I. U.	2 24 25.35	2.16068	71.10	+17 29 35.5	+2.94586
28	59	I. L.	2 53 43.74	2.17196	72.09	+20 17 10.4	+2.89785
Mar. 1	60	I. U.	3 23 48.52	2.18318	73.08	+22 44 46.3	+2.83455
1	60	I. L.	3 54 38.40	2.19326	73.99	+24 49 34.0	+2.75028
2	61	I. U.	4 26 7.78	2.20121	74.73	+26 29 6.7	+2.63458
2	61	I. L.	4 58 6.54	2.20629	75.17	+27 41 30.5	+2.46494
3	62	I. U.	5 30 20 75	2.20785	75.30	+28 25 32.5	+2.17085
3	62	I. L.	6 2 33.71	2.20542	75.08	+28 40 48.2	+0.67210
4	63	I. U.	6 34 27.77	2.19904	74.50	+28 27 42.7	—2.12937
4	63	I. L.	7 5 46.71	2.18907	73.60	+27 47 29.6	—2.42488
5	64	I. U.	7 36 16 80	2.17603	72.42	+26 42 2.2	—2.58692
5	64	I. L.	8 5 48.34	2.16074	71.07	+25 13 42.7	—2.69399
6	65	I. U.	8 34 15.73	2.14398	69.65	+23 25 10.7	—2.76997
6	65	I. L.	9 1 37.51	2.12672	68.18	+21 19 12.0	—2.82530
7	66	I. U.	9 27 55.40	2.10965	66.77	+18 58 32.9	—2.86646
7	66	I. L.	9 53 13.74	2.09346	65.46	+16 25 51.1	—2.89730
8	67	I. U.	10 17 38.54	2.07871	64.30	+13 43 33.8	—2.91991
8	67	I. L.	10 40 16.99	2.06580	63.31	+10 53 57.9	—2.93591
9	68	I. U.	11 4 16.96	2.05507	62.50	+ 7 59 8.4	—2.94640
10	68	II. L.	11 28 50.32	2.04669	61.88	+ 5 0 59.9	—2.95231
10	69	II. U.	11 50 56.88	2.04088	61.46	+ 2 1 18.2	—2.95410
11	70	II. L.	12 12 49.79	2.03771	61.23	— 0 58 19.4	—2.95202
11	70	II. U.	12 34 37.16	2.03711	61.20	— 3 56 20.7	—2.94630
12	71	II. L.	12 56 26.78	2.03914	61.36	— 6 51 17.4	—2.93682
12	71	II. U.	13 18 26.33	2.04364	61.72	— 9 41 44.2	—2.92350
13	72	II. L.	13 40 43.23	2.05046	62.25	—12 26 16.4	—2.90601
13	72	II. U.	14 3 24.61	2.05937	62.94	—15 3 27.7	—2.88366
14	73	II. L.	14 26 37.15	2.07007	63.77	—17 31 49.3	—2.85558
14	73	II. U.	14 50 26.90	2.08221	64.74	—19 49 49.3	—2.82053
15	74	II. L.	15 14 59.08	2.09538	65.80	—21 55 50.2	—2.77627
15	74	II. U.	15 40 17.57	2.10904	66.92	—23 48 10.6	—2.71983
16	75	II. L.	16 6 24.82	2.12264	68.06	—25 25 4.1	—2.64621
16	75	II. U.	16 33 20.99	2.13564	69.11	—26 44 42.1	—2.54654
17	76	II. L.	17 1 4.07	2.14743	70.11	—27 45 17.3	—2.40226
17	76	II. U.	17 29 29.43	2.15740	70.95	—28 25 8.1	—2.16017
18	77	II. L.	17 58 29.84	2.16507	71.62	—28 42 44.0	—1.47857
18	77	II. U.	18 27 55.85	2.17008	72.05	—28 36 51.7	+1.95279
19	78	II. L.	18 57 36.73	2.17231	72.23	—28 6 41.4	+2.32715

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	d.		h. m. s.		s.	° ′ ″	
Mar. 19	78	II. U.	19 27 21.20	2.17187	72.19	—27 11 50.9	+2.52621
20	79	II. L.	19 56 58.74	2.16906	71.92	—25 52 27.9	+2.66030
20	79	II. U.	20 26 20.59	2.16426	71.50	—24 9 9.9	+2.75929
21	80	II. L.	20 55 20.30	2.15821	70.95	—22 3 4.6	+2.83563
21	80	II. U.	21 23 54.39	2.15149	70.36	—19 35 45.4	+2.89570
22	81	II. L.	21 52 2.21	2.14492	69.76	—16 49 9.4	+2.94320
22	81	II. U.	22 19 45.91	2.13912	69.24	—13 45 35.2	+2.98046
23	82	II. L.	22 47 9.93	2.13469	68.85	—10 27 38.7	+3.00894
23	82	II. U.	23 14 20.69	2.13213	68.62	— 6 58 15.0	+3.02959
24	83	II. L.	23 41 26.09	2.13184	68.57	— 3 20 33.2	+3.04285
24	84	II. U.	0 8 35.07	2.13405	68.73	+ 0 22 1.3	+3.04887
25	84	I. L.	0 33 38.95	2.13878	69.12	+ 4 5 50.9	+3.04759
26	85	I. U.	1 1 22 67	2.14594	69.72	+ 7 47 7.1	+3.03874
26	85	I. L.	1 29 38.14	2.15531	70.51	+11 21 52.4	+3.02152
27	86	I. U.	1 58 33.70	2.16628	71.47	+14 46 4.8	+2.99471
27	86	I. L.	2 28 15.74	2.17823	72.53	+17 55 42.9	+2.95670
28	87	I. U.	2 58 47.93	2.19028	73.61	+20 46 50.8	+2.90493
28	87	I. L.	3 30 10.22	2.20137	74.64	+23 15 50.7	+2.83512
29	88	I. U.	4 2 17.73	2.21056	75.52	+25 19 29.4	+2.74044
29	88	I. L.	4 35 0.72	2.21683	76.13	+26 55 11.9	+2.60778
30	89	I. U.	5 8 4.60	2.21937	76.39	+28 1 13.5	+2.40483
30	89	I. L.	5 41 11.36	2.21772	76.25	+28 36 46.6	+2.00689
31	90	I. U.	6 14 1 35	2.21171	75.76	+28 42 6.2	—1.67394
31	90	I. L.	6 46 15.88	2.20167	74.83	+28 18 22.8	—2.27439
April 1	91	I. U.	7 17 39.00	2.18817	73.65	+27 27 35.5	—2.50202
1	91	I. L.	7 47 59.14	2.17199	72.22	+26 12 16.6	—2.63689
2	92	I. U.	8 17 9.57	2.15421	70.70	+24 35 17.7	—2.72770
2	92	I. L.	8 45 8.09	2.13564	69.12	+22 39 35.8	—2.79260
3	93	I. U.	9 11 56.36	2.11714	67.58	+20 28 3.7	—2.84048
3	93	I. L.	9 37 38.90	2.09951	66.14	+18 3 24.2	—2.87616
4	94	I. U.	10 2 22.23	2.08340	64.84	+15 28 6.9	—2.90260
4	94	I. L.	10 26 14.02	2.06915	63.71	+12 44 27.4	—2.92200
5	95	I. U.	10 49 22.70	2.05706	62.77	+ 9 54 28.5	—2.93581
5	95	I. L.	11 11 56.84	2.04743	62.03	+ 7 0 1.0	—2.94488
6	96	I. U.	11 34 5.02	2.04044	61.50	+ 4 2 47.0	—2.94968
6	96	I. L.	11 55 55.76	2.03619	61.16	+ 1 4 22.0	—2.95061
7	97	I. U.	12 17 37.27	2.03463	61.02	— 1 53 44.0	—2.94802
7	98	I. L.	12 39 17.58	2.03567	61.07	— 4 50 3.6	—2.94191
8	98	I. U.	13 1 4.39	2.03918	61.32	— 7 43 10.7	—2.93202
9	99	II. L.	13 25 8.63	2.04501	61.74	—10 31 38.3	—2.91808
9	99	II. U.	13 47 31.59	2.05300	62.33	—13 13 58.0	—2.89971
10	100	II. L.	14 10 22.46	2.06285	63.06	—15 48 38.6	—2.87599
10	100	II. U.	14 33 47.19	2.07412	63.94	—18 14 5.0	—2.84590
11	101	II. L.	14 57 50.87	2.08650	64.90	—20 28 38.1	—2.80801
11	101	II. U.	15 22 37.44	2.09951	65.94	—22 30 35.1	—2.76020
12	102	II. L.	15 48 9.42	2.11254	67.04	—24 18 10.6	—2.69819
12	102	II. U.	16 14 27.33	2.12509	68.07	—25 49 38.1	—2.61690
13	103	II. L.	16 41 29.66	2.13653	69.05	—27 3 13.7	—2.50583
13	103	II. U.	17 9 12.49	2.14638	69.90	—27 57 19.5	—2.34084
14	104	II. L.	17 37 29.52	2.15415	70.59	—28 30 28.8	—2.04571

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	d.		h. m. s.		s.	° ′ ″	
April 14	104	II. U.	18 6 12.37	2.15951	71.08	—28 41 31.2	+0.30103
15	105	II. L.	18 35 11.19	2.16221	71.34	—28 29 36.7	+2.07262
15	105	II. U.	19 4 15.59	2.16230	71.37	—27 54 18.1	+2.37162
16	106	II. L.	19 33 15.48	2.16005	71.18	—26 55 35.6	+2.54593
16	106	II. U.	20 2 2.26	2.15582	70.82	—25 33 53.6	+2.66727
17	107	II. L.	20 30 29.29	2.15017	70.36	—23 49 59.6	+2.75831
17	107	II. U.	20 58 32.57	2.14376	69.82	—21 45 1.6	+2.82937
18	108	II. L.	21 26 10.79	2.13726	69.26	—19 20 24.7	+2.88621
18	108	II. U.	21 53 25.32	2.13136	68.75	—16 37 49.9	+2.93192
19	109	II. L.	22 20 19.85	2.12668	68.33	—13 39 10.6	+2.96853
19	109	II. U.	22 47 0.17	2.12375	68.06	—10 26 35.6	+2.99734
20	110	II. L.	23 18 33.70	2.12300	67.97	— 7 2 27.0	+3.01924
20	110	II. U.	23 40 9.09	2.12480	68.08	— 3 29 23.2	+3.03455
21	111	II. L.	0 6 56.13	2.12934	68.42	+ 0 9 38.2	+3.04328
21	112	II. U.	0 34 5.05	2.13659	68.97	+ 3 51 21.0	+3.04509
22	112	II. L.	1 1 46.43	2.14641	69.75	+ 7 32 7.5	+3.03941
22	113	II. U.	1 30 10.42	2.15845	70.75	+11 8 0.7	+3.02535
23	113	II. L.	1 59 26 08	2.17225	71.91	+14 34 46.3	+3.00152
24.	114	I. U.	2 27 14.06	2.18684	73.19	+17 47 56.0	+2.96581
24	114	I. L.	2 58 28.22	2.20137	74.51	+20 42 59.4	+2.91519
25	115	I. U.	3 30 44.10	2.21466	75.72	+23 15 34.9	+2.84510
25	115	I. L.	4 3 55.29	2.22544	76.73	+25 21 45.2	+2.74741
26	116	I. U.	4 37 48 96	2.23256	77.41	+26 58 18.4	+2.60713
26	116	I. L.	5 12 6.44	2.23512	77.70	+28 3 3.7	+2.38417
27	117	I. U.	5 46 24.90	2.23259	77.54	+28 35 6.5	+1.89542
27	117	I. L.	6 20 20.23	2.22495	76.86	+28 34 51.4	—1.90363
28	118	I. U.	6 53 30.09	2.21264	75.76	+28 3 56.1	—2.35679
28	118	I. L.	7 25 36.39	2,19662	74.33	+27 4 55.0	—2.55642
29	119	I. U.	7 56 27.14	2.17782	72.71	+25 40 59.4	—2.67779
29	119	I. L.	8 25 56.38	2.15749	70.99	+23 55 36.2	—2.75959
30	120	I. U.	8 54 3.73	2.13672	69.25	+21 52 10.5	—2.81737
30	120	I. L.	9 20 52.80	2.11664	67.59	+19 33 55.3	—2.85944
May 1	121	I. U.	9 46 30.10	2.09823	66.24	+17 3 46.4	—2.88994
1	121	I. L.	10 11 4.41	2.08091	64.89	+14 24 17.6	—2.91215
2	122	I. U.	10 34 44.95	2.06599	63.73	+11 37 44.6	—2.92793
2	122	I. L.	10 57 41.44	2.05362	62.78	+ 8 46 4.8	—2.93857
3	123	I. U.	11 20 3.63	2.04407	62.05	+ 5 51 2.5	—2.94493
3	123	I. L.	11 42 0.98	2.03747	61.54	+ 2 54 11.1	—2.94765
4	124	I. U.	12 3 42.76	2.03375	61.24	— 0 3 3.8	—2.94690
4	125	I. L.	12 25 17.79	2.03290	61.15	— 2 59 20.8	—2.94286
5	125	I. U.	12 46 54.56	2.03487	61.26	— 5 53 20.0	—2.93550
5	126	I. L.	13 8 41.15	2.03945	61.58	— 8 43 41.0	—2.92448
6	126	I. U.	13 30 45.28	2.04646	62.07	—11 29 1.0	—2.90946
6	127	I. L.	13 53 14.18	2.05549	62.72	—14 7 52.9	—2.88962
7	127	I. U.	14 16 14.42	2.06633	63.52	—16 38 44.6	—2.86426
7	128	I. L.	14 39 51.87	2.07849	64.43	—18 59 58.3	—2.83203
8	128	II. U.	15 6 22.04	2.09212	65.43	—21 9 50.1	—2.79092
9	129	II. L.	15 31 28.61	2.10544	66.48	—23 6 32.1	—2.73837
9	129	II. U.	15 57 21.83	2.11850	67.53	—24 48 13.3	—2.67001
10	130	II. L.	16 24 0.85	2.13062	68.53	—26 13 4.1	—2.57886

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	d.		h. m. s.		s.	° ′ ″	
May 10	130	II. U.	16 51 22.33	2.14120	69.43	—27 19 19.5	—2.45040
11	131	II. L.	17 19 20.36	2.14968	70.17	—28 5 25.6	—2.25003
11	131	II. U.	17 47 46.68	2.15564	70.70	—28 30 4.6	—1.83171
12	132	II. L.	18 16 31.21	2.15887	71.01	—28 32 20.3	+1.65972
12	132	II. U.	18 45 22.91	2.15927	71.09	—28 11 42.2	+2.20599
13	133	II. L.	19 14 10.80	2.15697	70.94	—27 28 6.9	+2.43907
13	133	II. U.	19 42 44.99	2.15244	70.59	—26 21 58.1	+2.58651
14	134	II. L.	20 10 57.62	2.14610	70.09	—24 54 3.2	+2.69216
14	134	II. U.	20 38 43.41	2.13865	69.50	—23 5 29.7	+2.77244
15	135	II. L.	21 5 59.83	2.13078	68.87	—20 57 40.3	+2.83552
15	135	II. U.	21 32 47.22	2.12320	68.26	—18 32 9.2	+2.88591
16	136	II. L.	21 59 8.44	2.11664	67.72	—15 50 38.6	+2.92662
16	136	II. U.	22 25 8.51	2.11163	67.31	—12 54 57.6	+2.95937
17	137	II. L.	22 50 54.37	2.10873	67.07	— 9 47 1.8	+2.98543
17	137	II. U.	23 16 34.36	2.10840	67.02	— 6 28 55.0	+3.00538
18	138	II. L.	23 42 18.04	2.11089	67.19	— 3 2 51.1	+3.01963
18	139	II. U.	0 8 15.87	2.11631	67.60	+ 0 28 42.3	+3.02820
19	139	II. L.	0 34 38 98	2.12480	67.25	+ 4 3 0.1	+3.03069
19	140	II. U.	1 1 38.71	2.13615	69.14	+ 7 36 56.3	+3.02658
20	140	II. L.	1 29 26.32	2.15002	70.25	+11 7 1.8	+3.01475
20	141	II. U.	1 58 12.26	2.16587	71.56	+14 29 23.3	+2.99365
21	141	II. L.	2 28 5.10	2.18290	73.01	+17 39 45.0	+2.96108
21	142	II. U.	2 59 10 32	2.20006	74.51	+20 33 35.0	+2.91386
22	142	II. L.	3 31 28.63	2.21609	75.95	+23 6 16.0	+2.84692
22	143	I. U.	4 2 20.24	2.22917	77.20	+25 13 23.2	+2.75196
23	143	I. L.	4 36 39.33	2.23905	78.13	+26 51 6.5	+2.61258
24	144	I. U.	5 11 34.27	2.24400	78.61	+27 56 34.3	+2.38657
24	144	I. L.	5 46 39.75	2.24334	78.55	+28 28 16.3	+1.86615
25	145	I. U.	6 21 27.90	2.23686	77.95	+28 26 12.4	—1.96754
25	145	I. L.	6 55 32.32	2.22505	76.88	+27 51 53.1	—2.39477
26	146	I. U.	7 28 31.27	2.20876	75 43	+26 48 0.0	—2.58849
26	146	I. L.	8 0 10.08	2.18929	73.72	+25 18 3.8	—2.70621
27	147	I. U.	8 30 21.09	2.16788	71.88	+23 25 57.4	—2.78491
27	147	I. L.	8 59 3.22	2.14579	70.03	+21 15 33.6	—2.83980
28	148	I. U.	9 26 20.43	2.12408	68.26	+18 50 31.2	—2.87864
28	148	I. L.	9 52 20.00	2.10374	66.64	+16 14 5.7	—2.90614
29	149	I. U.	10 17 11.28	2.08533	65.22	+13 29 7.9	—2.92531
29	149	I. L.	10 41 4.65	2.06941	64.02	+10 38 3.0	—2.93807
30	150	I. U.	11 4 10.86	2.05633	63.03	+ 7 42 55.1	—2.94584
30	150	I. L.	11 26 40.49	2.04622	62.27	+ 4 45 30.4	—2.94948
31	151	I. U.	11 48 43.84	2.03926	61.75	+ 1 47 21.0	—2.94951
31	152	I. L.	12 10 30.88	2.03547	61.46	— 1 10 9.9	—2.94635
June 1	152	I. U.	12 32 11.10	2.03471	61.39	— 4 5 45.9	—2.94007
1	153	I. L.	12 53 53.58	2.03695	61.52	— 6 58 12.8	—2.93058
2	153	I. U.	13 15 47.00	2.04195	61.85	— 9 46 15.8	—2.91755
2	154	I. L.	13 37 59.50	2.04945	62.37	—12 28 37.5	—2.90053
3	154	I. U.	14 0 38.80	2.05915	63.07	—15 3 55.4	—2.87875
3	155	I. L.	14 23 51.80	2.07067	63.91	—17 30 39.9	—2.85107
4	155	I. U.	14 47 44.58	2.08350	64.86	—19 47 14.5	—2.81601
4	156	I. L.	15 12 21.92	2.09715	65.89	—21 51 55.3	—2.77126

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	d.		h. m. s.		s.	° ′ ″	
June 5	156	I. U.	15 37 46.90	2.11096	66.96	—23 42 52.2	—2.71370
5	157	I. L.	16 4 0.57	2.12431	68.02	—25 18 11.3	—2.63784
6	157	I. U.	16 31 1.41	2.13653	69.00	—26 35 59.4	—2.53425
6	158	I. L.	16 58 45.09	2.14687	69.84	—27 34 29.5	—2.38296
7	158	II. U.	17 29 25.38	2.15515	70.51	—28 12 7.3	—2.12631
8	159	II. L.	17 58 11.63	2.16014	70.95	—28 27 38.8	—1.31910
8	159	II. U.	18 27 11.68	2.16209	71.13	—28 20 15.2	+1.97798
9	160	II. L.	18 56 13.34	2.16098	71.06	—27 49 38.4	+2.32417
9	160	II. U.	19 25 4.72	2.15703	70.76	—26 56 1.2	+2.51145
10	161	II. L.	19 53 35.59	2.15070	70.27	—25 40 6.5	+2.63707
10	161	II. U.	20 21 38.22	2.14267	69.64	—24 3 2.7	+2.72907
11	162	II. L.	20 49 7.70	2.13360	68.92	—22 6 17.7	+2.79946
11	162	II. U.	21 16 2.38	2.12428	68.19	—19 51 33.8	+2.85464
12	163	II. L.	21 42 23.39	2.11541	67.50	—17 20 41.4	+2.89847
12	163	II. U.	22 8 14.39	2.10772	66.91	—14 35 36.3	+2.93333
13	164	II. L.	22 33 41.16	2.10182	66.46	—11 38 16.6	+2.96095
13	164	II. U.	22 58 51.18	2.09819	66.18	— 8 30 42.4	+2.98231
14	165	II. L.	23 23 53 23	2.09729	66.11	— 5 14 56.6	+2.99817
14	165	II. U.	23 48 57.15	2.09934	66.27	— 1 53 7.2	+3.00883
15	166	II. L.	0 14 13.67	2.10452	66.67	+ 1 32 29.9	+3.01437
15	167	II. U.	0 39 54.00	2.11287	67.32	+ 4 59 28.1	+3.01445
16	167	II. L.	1 6 9.74	2.12421	68.21	+ 8 25 4.8	+3.00849
16	168	II. U.	1 33 12 43	2.13827	69.33	+11 46 19.1	+2.99553
17	168	II. L.	2 1 12.98	2.15455	70.65	+14 59 47.9	+2.97399
17	169	II. U.	2 30 20.80	2.17225	72.13	+18 1 46.7	+2.94170
18	169	II. L.	3 0 42.62	2.19033	73.69	+20 48 10.9	+2.89541
18	170	II. U.	3 32 20.96	2.20774	75.22	+23 14 44.1	+2.82986
19	170	II. L.	4 5 12.52	2.22300	76.59	+25 17 10.9	+2.73653
19	171	II. U.	4 39 6.89	2.23477	77.66	+26 51 37.7	+2.59832
20	171	II. L.	5 13 46.14	2.24180	78.31	+27 54 56.6	+2.37074
20	172	II. U.	5 48 46.02	2.24324	78.45	+28 25 8.7	+1.82412
21	172	I. L.	6 21 2.65	2.23910	78.05	+28 21 43.8	—2.00067
22	173	I. U.	6 55 22.41	2.22925	77.13	+27 45 39.0	—2.41244
22	173	I. L.	7 28 44.53	2.21463	75.79	+26 39 17.7	—2.60449
23	174	I. U.	8 0 51.53	2.19623	74.16	+25 5 59.2	—2.72225
23	174	I. L.	8 31 33.41	2.17554	72.37	+23 9 37.1	—2.80120
24	175	I. U.	9 0 47.01	2.15378	70.55	+20 54 14.4	—2.85601
24	175	I. L.	9 28 34.83	2.13213	68.79	+18 23 44.9	—2.89444
25	176	I. U.	9 55 3.28	2.11160	67.16	+15 41 41.6	—2.92102
25	176	I. L.	10 20 21.25	2.09286	65.71	+12 51 12.3	—2.93898
26	177	I. U.	10 44 38.95	2.07653	64.47	+ 9 54 58.5	—2.95020
26	177	I. L.	11 8 7.19	2.06296	63.46	+ 6 55 16.8	—2.95604
27	178	I. U.	11 30 56.71	2.05239	62.70	+ 3 54 3.8	—2.95761
27	178	I. L.	11 53 18.12	2.04493	62.18	+ 0 52 58.3	—2.95550
28	179	I. U.	12 15 21.66	2.04068	61.88	— 2 6 32.0	—2.95007
28	180	I. L.	12 37 17.12	2.03957	61.80	— 5 3 9.1	—2.94141
29	180	I. U.	12 59 13.87	2.04155	61.94	— 7 55 38.7	—2.92952
29	181	I. L.	13 21 20.81	2.04634	62.28	—10 42 48.2	—2.91401
30	181	I. U.	13 43 46.73	2.05369	62.82	—13 23 23.3	—2.89449
30	182	I. L.	14 6 39.31	2.06333	63.52	—15 56 5.0	—2.87004

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	d.		h. m. s.		s.	° ′ ″	
July 1	182	I. U.	14 30 5.93	2.07489	64.37	—18 19 28.5	—2.83959
1	183	I. L.	14 54 12.88	2.08778	65.34	—20 32 1.4	—2.80150
2	183	I. U.	15 19 5.19	2.10155	66.38	—22 32 2.7	—2.75275
2	184	I. L.	15 44 46.09	2.11549	67.45	—24 17 44.9	—2.69000
3	184	I. U.	16 11 16.85	2.12893	68.53	—25 47 15.1	—2.60585
3	185	I. L.	16 38 35.34	2.14129	69.51	—26 58 41.8	—2.48945
4	185	I. U.	17 6 37.47	2.15170	70.33	—27 50 15.8	—2.31278
4	186	I. L.	17 35 15.49	2.15958	70.95	—28 20 24.4	—1.97845
5	186	I. U.	18 4 19.21	2.16453	71.35	—28 27 51.6	+1.32186
5	187	I. L.	18 33 36.36	2.16623	71.48	—28 11 51.9	+2.14571
6	187	I. U.	19 2 54.11	2.16491	71.34	—27 32 9.6	+2.41073
7	188	II. L.	19 34 21.91	2.16019	70.97	—26 29 4.2	+2.57099
7	188	II. U.	20 3 4.13	2.15336	70.41	—25 3 29.1	+2.68334
8	189	II. L.	20 31 15.51	2.14458	69.71	—23 16 41.2	+2.76633
8	189	II. U.	20 58 51.19	2.13488	68.92	—21 10 27.6	+2.83059
9	190	II. L.	21 25 49.37	2.12476	68.12	—18 46 42.8	+2.88035
9	190	II. U.	21 52 12.05	2.11518	67.40	—16 7 36.1	+2.91935
10	191	II. L.	22 18 2.31	2.10704	66.77	—13 15 19.3	+2.94972
10	191	II. U.	22 43 26.56	2.10071	66.28	—10 12 7.1	+2.97292
11	192	II. L.	23 8 32.15	2.09664	65.98	— 7 0 15.3	+2.98994
11	192	II. U.	23 33 28.01	2.09520	65.88	— 3 41 58.1	+3.00151
12	193	II. L.	23 58 23.83	2.09671	66.01	— 0 19 35.1	+3.00786
12	194	II. U.	0 23 30 06	2.10119	66.38	+ 3 4 34.7	+3.00904
13	194	II. L.	0 48 57.65	2.10888	67.00	+ 6 28 2.7	+3.00479
13	195	II. U.	1 14 57.62	2.11946	67.85	+ 9 48 12.0	+2.99465
14	195	II. L.	1 41 41.22	2.13249	68.92	+13 2 13.2	+2.97672
14	196	II. U.	2 9 17.95	2.14787	70.17	+16 6 59.5	+2.95204
15	196	II. L.	2 37 57.22	2.16459	71.56	+18 59 12.6	+2.91630
15	197	II. U.	3 7 45.34	2.18167	73.04	+21 35 16.8	+2.86568
16	197	II. L.	3 38 44.51	2.19829	74.47	+23 51 29.5	+2.79602
16	198	II. U.	4 10 52.24	2.21292	75.76	+25 44 7.3	+2.69767
17	198	II. L.	4 43 59.46	2.22448	76.78	+27 9 47.2	+2.55153
17	199	II. U.	5 17 50.64	2.23182	77.44	+28 5 40.7	+2.30370
18	199	II. L.	5 52 4.41	2.23400	77.64	+28 29 57.4	+1.60874
18	200	II. U.	6 26 15.89	2.23084	77.31	+28 22 0.8	—2.07669
19	200	II. L.	6 59 59.96	2.22249	76.53	+27 42 33.6	—2.43554
19	201	II. U.	7 32 54.31	2.20944	75.33	+26 33 31.4	—2.61700
20	201	II. L.	8 4 42.29	2.19307	73.86	+24 57 49.9	—2.73223
21	202	I. U.	8 32 48.88	2.17454	72.20	+22 59 0.9	—2.81018
21	202	I. L.	9 2 2.38	2.15460	70.51	+20 40 53.0	—2.86488
22	203	I. U.	9 29 55.99	2.13431	68.83	+18 7 13.0	—2.90368
22	203	I. L.	9 56 34.77	2.11498	67.31	+15 21 36.2	—2.93049
23	204	I. U.	10 22 6.26	2.09717	65.95	+12 27 14.4	—2.94875
23	204	I. L.	10 46 39.63	2.08146	64.75	+ 9 26 59.5	—2.95994
24	205	I. U.	11 10 25.08	2.06838	63.78	+ 6 23 18.9	—2.96535
24	205	I. L.	11 33 32.50	2.05816	63.03	+ 3 18 20.2	—2.96611
25	206	I. U.	11 56 12.09	2.05085	62.53	+ 0 13 54.3	—2.96285
25	207	I. L.	12 18 33.66	2.04660	62.26	— 2 48 22.5	—2.95596
26	207	I. U.	12 40 46.76	2.04536	62.19	— 5 47 3.8	—2.94560
26	208	I. L.	13 3 0.60	2.04706	62.34	— 8 40 50.7	—2.93141

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	d.		h. m. s.		s.	° ′ ″	
July 27	208	I. U.	13 25 23.87	2.05143	62.70	—11 28 25.9	—2.91404
27	209	I. L.	13 48 5.01	2.05839	63.23	—14 8 33.0	—2.89221
28	209	I. U.	14 11 11.75	2.06752	63.92	—16 39 57.6	—2.86498
28	210	I. L.	14 34 51.27	2.07862	64.76	—19 1 12.1	—2.83144
29	210	I. U.	14 59 9.80	2.09100	65.72	—21 10 50.1	—2.79012
29	211	I. L.	15 24 12.24	2.10428	66.76	—23 7 16.7	—2.73756
30	211	I. U.	15 50 1.96	2.11780	67.80	—24 48 48.0	—2.66989
30	212	I. L.	16 16 39.89	2.13082	68.82	—26 13 40.1	—2.57966
31	212	I. U.	16 44 4.85	2.14279	69.78	—27 20 4.4	—2.45257
31	213	I. L.	17 12 12.24	2.15295	70.61	—28 6 18.5	—2.25197
Aug. 1	213	I. U.	17 40 55.04	2.16070	71.23	—28 30 52.0	—1.82347
1	214	I. L.	18 10 3.50	2.16570	71.62	—28 32 30.8	+1.70491
2	214	I. U.	18 39 25.98	2.16765	71.74	—28 10 29.3	+2.22957
2	215	I. L.	19 8 50.14	2.16655	71.58	—27 24 28.7	+2.46195
3	215	I. U.	19 38 3.94	2.16265	71.21	—26 14 48.2	+2.60867
3	216	I. L.	20 6 57.19	2.15635	70.67	—24 42 13.9	+2.71445
4	216	I. U.	20 35 21.95	2.14838	70.00	—22 48 6.7	+2.79335
5	217	I. L.	21 3 13 37	2.13940	69.23	—20 34 10.5	+2.85449
5	217	II. U.	21 32 46.55	2.12964	68.48	—18 2 26.4	+2.90266
6	218	II. L.	21 59 27.31	2.12081	67.77	—15 15 11.8	+2.94005
6	218	II. U.	22 25 37.78	2.11317	67.17	—12 14 50.1	+2.96863
7	219	II. L.	22 51 23.73	2.10712	66.71	— 9 3 53.7	+2.98990
7	219	II. U.	23 16 52 33	2.10346	66.42	— 5 44 54.8	+3.00471
8	220	II. L.	23 42 12.32	2.10233	66.37	— 2 20 28.8	+3.01339
8	221	II. U.	0 7 32.94	2.10386	66.53	+ 1 6 45.8	+3.01663
9	221	II. L.	0 33 4.19	2.10831	66.89	+ 4 34 9.1	+3.01400
9	222	II. U.	0 58 56.35	2.11567	67.49	+ 7 58 56.8	+3.00549
10	222	II. L.	1 25 19.79	2.12555	68.33	+11 18 17.2	+2.99050
10	223	II. U.	1 52 24.24	2.13780	69.35	+14 29 14.1	+2.96779
11	223	II. L.	2 20 18.58	2.15174	70.53	+17 28 40.6	+2.93608
11	224	II. U.	2 49 9.98	2.16674	71.82	+20 13 23.4	+2.89261
12	224	II. L.	3 19 2.69	2.18163	73 13	+22 40 5.0	+2.83440
12	225	II. U.	3 49 57.02	2.19597	74.38	+24 45 24.8	+2.75434
13	225	II. L.	4 21 48.76	2.20808	75.45	+26 26 19.5	+2.64191
13	226	II. U.	4 54 28.13	2.21716	76.27	+27 40 0.4	+2.47228
14	226	II. L.	5 27 39.63	2.22214	76.71	+28 24 29.5	+2.16695
14	227	II. U.	6 1 3.88	2.22258	76.71	+28 38 24.2	—0.89702
15	227	II. L.	6 34 19.20	2.21818	76.30	+28 21 44.5	—2.20237
15	228	II. U.	7 7 4.35	2.20942	75.46	+27 35 20.7	—2.48236
16	228	II. L.	7 39 1.20	2.19670	74.30	+26 21 11.7	—2.64003
16	229	II. U.	8 9 56.21	2.18108	72.88	+24 41 52.3	—2.74401
17	229	II. L.	8 39 41.49	2.16362	71.38	+22 40 37.9	—2.81660
17	230	II. U.	9 8 13.90	2.14516	69.81	+20 20 47.7	—2.86891
18	230	II. L.	9 35 35.14	2.12681	68.28	+17 45 50.3	—2.90704
19	231	I. U.	9 59 36.17	2.10971	66.88	+14 58 59.3	—2.93387
19	231	I. L.	10 24 53.90	2.09408	65.61	+12 3 17.5	—2.95225
20	232	I. U.	10 49 20.00	2.08024	64.54	+ 9 1 30.3	—2.96377
20	232	I. L.	11 13 3.39	2.06859	63.70	+ 5 56 5.3	—2.96954
21	233	I. U.	11 36 13.44	2.05950	63.07	+ 2 49 13.7	—2.97058
21	233	I. L.	11 58 59.19	2.05330	62.62	— 0 17 7.3	—2.96725

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	d.		h. m. s.		s.	° ′ ″	
Aug. 22	234	I. U.	12 21 29.85	2.04989	62.40	— 3 21 12.6	—2.96010
22	235	I. L.	12 43 54.14	2.04920	62.38	— 6 21 27.5	—2.94887
23	235	I. U.	13 6 20.55	2.05120	62.57	— 9 16 23.0	—2.93389
23	236	I. L.	13 28 57.22	2.05576	62.94	—12 4 35.3	—2.91477
24	236	I. U.	13 51 51.74	2.06266	63.50	—14 44 43.2	—2.89098
24	237	I. L.	14 15 11.39	2.07145	64.20	—17 15 22.7	—2.86160
25	237	I. U.	14 39 2.43	2.08174	65.02	—19 35 9.5	—2.82562
25	238	I. L.	15 3 30.37	2.09346	65.95	—21 42 36.8	—2.78089
26	238	I. U.	15 28 39.89	2.10584	66.95	—23 36 12.1	—2.72477
26	239	I. L.	15 54 33.45	2.11820	67.94	—25 14 19.1	—2.65245
27	239	I. U.	16 21 11.37	2.13030	68.92	—26 35 21.0	—2.55606
27	240	I. L.	16 48 32.23	2.14123	69.82	—27 37 39.0	—2.41898
28	240	I. U.	17 16 31.75	2.15049	70.57	—28 19 42.9	—2.19728
28	241	I. L.	17 45 3.35	2.15753	71.14	—28 40 13.6	—1.66787
29	241	I. U.	18 13 58.12	2.16211	71.51	—28 38 4.2	+1.84103
29	242	I. L.	18 43 5.82	2.16400	71.63	—28 12 31.2	+2.27148
30	242	I. U.	19 12 15.44	2.16314	71.52	—27 23 19.5	+2.48491
30	243	I. L.	19 41 16.76	2.15984	71.18	—26 10 40.6	+2.62425
31	243	I. U.	20 10 0.72	2.15453	70.70	—24 35 14.4	+2.72662
31	244	I. L.	20 38 20.68	2.14774	70.09	—22 38 9.3	+2.80418
Sept. 1	244	I. U.	21 6 12.50	2.14019	69.45	—20 20 56.3	+2.86537
1	245	I. L.	21 33 35.02	2.13254	68.77	—17 45 26.2	+2.91369
2	245	I. U.	22 0 29.44	2.12535	68.15	—14 53 46.2	+2.95166
2	246	I. L.	22 26 59.37	2.11933	67.66	—11 48 19.1	+2.98121
3	246	I. U.	22 53 10.33	2.11501	67.32	— 8 31 37.0	+3.00313
4	247	II. L.	23 21 23.73	2.11285	67.16	— 5 6 21.9	+3.01823
4	247	II. U.	23 47 19.22	2.11304	67.18	— 1 35 25.3	+3.02697
5	248	II. L.	0 13 20.52	2.11591	67.40	+ 1 58 15.2	+3.02942
5	249	II. U.	0 39 37.09	2.12149	67.85	+ 5 31 33.8	+3.02546
6	249	II. L.	1 6 19.06	2.12969	68.54	+ 9 1 18.2	+3.01467
6	250	II. U.	1 33 35.84	2.14003	69.44	+12 24 8.6	+2.99624
7	250	II. L.	2 1 35.63	2.15232	70.50	+15 36 41.4	+2.96905
7	251	II. U.	2 30 25.84	2.16566	71.67	+18 35 27.8	+2.93124
8	251	II. L.	3 0 11.18	2.17935	72.90	+21 16 59.9	+2.88014
8	252	II. U.	3 30 53.02	2.19257	74.08	+23 37 53.8	+2.81128
9	252	II. L.	4 2 28.43	2.20407	75.14	+25 35 0.9	+2.71690
9	253	II. U.	4 34 49 39	2.21304	75.99	+27 5 34.8	+2.58272
10	253	II. L.	5 7 42.98	2.21851	76.52	+28 7 29.1	+2.37138
10	254	II. U.	5 40 51.91	2.21963	76.62	+28 39 24.2	+1.92312
11	254	II. L.	6 13 56.44	2.21649	76.31	+28 40 58.6	—1.82877
11	255	II. U.	6 46 36.62	2.20893	75.62	+28 12 50.4	—2.32813
12	255	II. L.	7 18 34.51	2.19767	74.59	+27 16 31.8	—2.54197
12	256	II. U.	7 49 36.27	2.18338	73.29	+25 54 20.2	—2.67300
13	256	II. L.	8 19 32.76	2.16690	71.82	+24 9 4.4	—2.76268
13	257	II. U.	8 48 19.86	2.14919	70.29	+22 3 46.7	—2.82662
14	257	II. L.	9 15 57.43	2.13130	68.77	+19 41 35.4	—2.87392
14	258	II. U.	9 42 29.40	2.11414	67.35	+17 5 32.6	—2.90834
15	258	II. L.	10 8 1.40	2.09823	66.05	+14 18 34.1	—2.93326
15	259	II. U.	10 32 40.96	2.08411	64.91	+11 23 20.6	—2.95069
16	259	II. L.	10 56 36.46	2.07195	63.97	+ 8 22 18.8	—2.96181

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	d		h. m. s.		s.	° ′ ″	
Sept. 16	260	II. U.	11 19 56.55	2.06225	63.24	+ 5 17 43.6	—2.96761
17	260	II. L.	11 42 49.97	2.05538	62.71	+ 2 11 40.0	—2.96751
18	261	I. U.	12 3 20.72	2.05107	62.38	— 0 54 0.9	—2.96577
18	262	I. L.	12 25 46.71	2.04814	62.25	— 3 57 31.3	—2.95870
19	262	I. U.	12 48 11.16	2.04980	62.32	— 6 57 13.0	—2.94766
19	263	I. L.	13 10 41.47	2.05292	62.58	— 9 51 33.8	—2.93230
20	263	I. U.	13 33 25.09	2.05832	63.01	—12 39 1.4	—2.91256
20	264	I. L.	13 56 28.77	2.06565	63.60	—15 18 5.6	—2.88754
21	264	I. U.	14 19 58.89	2.07464	64.33	—17 47 16.6	—2.85650
21	265	I. L.	14 44 0.79	2.08490	65.15	—20 5 3.5	—2.81817
22	265	I. U.	15 8 38.79	2.09604	66.05	—22 9 54.6	—2.77045
22	266	I. L.	15 33 56.08	2.10758	66.99	—24 0 19.1	—2.71042
23	266	I. U.	15 59 53.69	2.11896	67.94	—25 34 45.5	—2.63317
23	267	I. L.	16 26 31.34	2.12959	68.85	—26 51 39.2	—2.52973
24	267	I. U.	16 53 46.46	2.13893	69.63	—27 49 34.7	—2.37989
24	268	I. L.	17 21 33.77	2.14650	70.27	—28 27 15.6	—2.13311
25	268	I. U.	17 49 46.56	2.15198	70.74	—28 43 35.7	—1.42984
25	269	I. L.	18 18 16.39	2.15522	71.01	—28 37 45.1	+1.93224
26	269	I. U.	18 46 54.17	2.15610	71.07	—28 9 16.5	+2.30162
26	270	I. L.	19 15 30.43	2.15464	70.91	—27 18 3.0	+2.49525
27	270	I. U.	19 43 56.76	2.15106	70.57	—26 4 20.0	+2.62729
27	271	I. L.	20 12 6.35	2.14598	70.11	—24 28 44.5	+2.72535
28	271	I. U.	20 39 54.19	2.13988	69.59	—22 32 15.4	+2.80114
28	272	I. L.	21 7 18.04	2.13338	69.05	—20 16 8.2	+2.86172
29	272	I. U.	21 34 18.09	2.12713	68.51	—17 41 55.2	+2.91017
29	273	I. L.	22 0 56.42	2.12189	68.04	—14 51 24.1	+2.94940
30	273	I. U.	22 27 17.56	2.11793	67.68	—11 46 36.5	+2.98052
30	274	I. L.	22 53 27.48	2.11578	67.46	— 8 29 46.7	+3.00439
Oct. 1	274	I. U.	23 19 33.67	2.11584	67.44	— 5 3 23.0	+3.02180
1	275	II. L.	23 47 59.85	2.11867	67.65	— 1 30 9.8	+3.03269
2	276	II. U.	0 14 25.76	2.12405	68.08	+ 2 6 52.0	+3.03712
2	276	II. L.	0 41 16.08	2.13197	68.72	+ 5 44 25.3	+3.03474
3	277	II. U.	1 8 40.64	2.14230	69.56	+ 9 18 57.8	+3.02484
4	277	II. L.	1 36 48.91	2.15458	70.59	+12 46 41.7	+3.00653
4	278	II. U.	2 5 49.13	2.16841	71.79	+16 3 37.6	+2.97811
5	278	II. L.	2 35 47.36	2.18292	73.08	+19 5 39.3	+2.93753
5	279	II. U.	3 6 46.45	2.19714	74.37	+21 48 40.8	+2.88143
6	279	II. L.	3 38 44.80	2.20997	75.56	+24 8 48.3	+2.80432
6	280	II. U.	4 11 35.63	2.22032	76.56	+26 2 32.0	+2.69690
7	280	II. L.	4 45 6.19	2.22715	77.26	+27 27 3.9	+2.53942
7	281	II. U.	5 18 58.62	2.22961	77.51	+28 20 31.7	+2.27567
8	281	II. L.	5 52 51.37	2.22735	77.32	+28 42 10.2	+1.43001
8	282	II. U.	6 26 22.40	2.22032	76.71	+28 32 22.9	—2.10449
9	282	II. L.	6 59 11.08	2.20895	75.70	+27 52 38.3	—2.43100
9	283	II. U.	7 31 0.92	2.19410	74.37	+26 45 19.1	—2.60282
10	283	II. L.	8 1 40.90	2.17687	72.79	+25 13 22.2	—2.71286
10	284	II. U.	8 31 5.89	2.15806	71.15	+23 20 0.0	—2.78871
11	284	II. L.	8 59 15.17	2.13884	69.55	+21 8 29.6	—2.84359
11	285	II. U.	9 26 11.85	2.12018	68.01	+18 42 0.2	—2.88352
12	285	II. L.	9 52 2.65	2.10275	66.57	+16 3 27.6	—2.91288

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	d.		h. m. s.		s.	° ′ ″	
Oct. 12	286	II. U.	10 16 55.01	2.08711	65.30	+13 15 31.7	—2.93398
13	286	II. L.	10 40 58.20	2.07365	64.23	+10 20 36.1	—2.94858
13	287	II. U.	11 4 21.31	2.06266	63.36	+ 7 20 52.5	—2.95780
14	287	II. L.	11 27 13.62	2.05438	62.71	+ 4 18 18.3	—2.96234
14	288	II. U.	11 49 44.28	2.04891	62.26	+ 1 14 42.7	—2.96276
15	289	II. L.	12 12 2.08	2.04614	62.02	— 1 48 12.3	—2.95914
15	289	II. U.	12 34 15.41	2.04591	61.99	— 4 48 50.1	—2.95168
16	290	II. L.	12 56 32.25	2.04825	62.16	— 7 45 36.1	—2.94033
16	290	II. U.	13 19 0.13	2.05304	62.50	—10 36 57.7	—2.92469
17	291	I. L.	13 39 39.95	2.05941	62.98	—13 21 23.6	—2.90423
18	291	I. U.	14 2 48.89	2.06781	63.61	—15 57 17.9	—2.87817
18	292	I. L.	14 26 27.26	2.07766	64.39	—18 23 6.6	—2.84559
19	292	I. U.	14 50 39.87	2.08842	65.25	—20 37 12.8	—2.80502
19	293	I. L.	15 15 29.74	2.09961	66.14	—22 37 59.5	—2.75420
20	293	I. U.	15 40 58.67	2.11076	67.06	—24 23 49.7	—2.68958
20	294	I. L.	16 7 6.41	2.12133	67.94	—25 53 8.8	—2.60528
21	294	I. U.	16 33 50.69	2.13072	68.74	—27 4 29.5	—2.49032
21	295	I. L.	17 1 7.08	2.13846	69.42	—27 56 31.6	—2.32222
22	295	I. U.	17 28 49.33	2.14420	69.93	—28 28 8.9	—2.02383
22	296	I. L.	17 56 49.39	2.14737	70.25	—28 38 32.4	+0.32451
23	296	I. U.	18 24 58.35	2.14882	70.37	—28 27 11.1	+2.04726
23	297	I. L.	18 53 7.05	2.14765	70.30	—27 53 55.8	+2.34339
24	297	I. U.	19 21 6.99	2.14432	70.04	—26 58 58.0	+2.51624
24	298	I. L.	19 48 51.07	2.13944	69.63	—25 42 48.3	+2.63605
25	298	I. U.	20 16 14.11	2.13332	69.13	—24 6 14.2	+2.72597
25	299	I. L.	20 43 13.13	2.12675	68.58	—22 10 17.5	+2.79666
26	299	I. U.	21 9 47.63	2.12008	68.04	—19 56 10.6	+2.85356
26	300	I. L.	21 35 59.34	2.11431	67.54	—17 25 15.9	+2.89993
27	300	I. U.	22 1 51.96	2.10965	67.15	—14 39 3.9	+2.93779
27	301	I. L.	22 27 31.05	2.10677	66.89	—11 39 14.5	+2.96857
28	301	I. U.	22 53 3.67	2.10605	66.80	— 8 27 36.9	+2.99314
28	302	I. L.	23 18 37.91	2.10786	66.92	— 5 6 13.2	+3.01186
29	302	I. U.	23 44 23.88	2.11241	67.25	— 1 37 21.0	+3.02477
29	303	I. L.	0 10 31.09	2.11989	67.81	+ 1 56 21.7	+3.03178
30	304	I. U.	0 37 10.53	2.13007	68.63	+ 5 31 57.5	+3.03225
30	304	I. L.	1 4 33.09	2.14292	69.68	+ 9 6 2.6	+3.02554
31	305	I. U.	1 32 49.44	2.15797	70.92	+12 34 48.9	+3.01013
31	305	I. L.	2 2 8.78	2.17461	72.32	+15 54 2.1	+2.98439
Nov. 1	306	II. U.	2 35 6.44	2.19257	73.82	+18 59 11.1	+2.94579
2	306	II. L.	3 6 52.98	2.20933	75.34	+21 45 32.0	+2.89029
2	307	II. U.	3 39 51.27	2.22430	76.74	+24 8 26.5	+2.81191
3	307	II. L.	4 13 51.96	2.23621	77.85	+26 3 39.6	+2.69959
3	308	II. U.	4 48 38.38	2.24383	78.62	+27 27 44.7	+2.52922
4	308	II. L.	5 23 49.52	2.24606	78.90	+28 18 24.6	+2.22458
4	309	II. U.	5 58 58.50	2.24247	78.61	+28 34 51.0	—0.47150
5	309	II. L.	6 33 36.14	2.23338	77.82	+28 17 45.6	—2.22056
5	310	II. U.	7 7 19.36	2.21950	76.59	+27 29 13.0	—2.50051
6	310	II. L.	7 39 49.93	2.20187	75.02	+26 12 17.6	—2.65256
6	311	II. U.	8 10 56.80	2.18164	73.25	+24 30 41.2	—2.75051
7	311	II. L.	8 40 36.23	2.16032	71.39	+22 28 14.1	—2.81779

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	d.		h. m. s.		s.	° ′ ″	
Nov. 7	312	II. U.	9 8 49.62	2.13887	69.58	+20 8 44.3	—2.86590
8	312	II. L.	9 35 42.91	2.11836	67.91	+17 35 40.2	—2.89965
8	313	II. U.	10 1 24.53	2.09954	66.40	+14 52 7.5	—2.92393
9	313	II. L.	10 26 4.44	2.08297	65.09	+12 0 48.7	—2.94050
9	314	II. U.	10 49 53.11	2.06908	64.00	+ 9 4 3.9	—2.95121
10	314	II. L.	11 13 1.22	2.05794	63.13	+ 6 3 56.2	—2.95712
10	315	II. U.	11 35 39.13	2.04984	62.49	+ 3 2 12.8	—2.95888
11	315	II. L.	11 57 56.64	2.04485	62.07	+ 0 0 32.9	—2.95696
11	316	II. U.	12 20 3.23	2.04285	61.88	— 2 59 34.9	—2.95157
12	317	II. L.	12 42 7.91	2.04364	61.90	— 5 56 45.4	—2.94251
12	317	II. U.	13 4 19.10	2.04704	62.12	— 8 49 32.4	—2.92953
13	318	II. L.	13 26 44.56	2.05277	62.51	—11 36 32.0	—2.91281
13	318	II. U.	13 49 31.38	2.06066	63.06	—14 16 15.8	—2.89097
14	319	II. L.	14 12 46.07	2.07019	63.75	—16 47 12.3	—2.86349
14	319	II. U.	14 36 33.92	2.08099	64.55	—19 7 47.4	—2.82872
15	320	II. L.	15 0 58.98	2.09258	65.43	—21 16 21.1	—2.78546
15	320	I. U.	15 23 51.42	2.10377	66.35	—23 11 15.2	—2.73035
16	321	I. L.	15 49 35.24	2.11494	67.23	—24 50 47.3	—2.65947
17	321	I. U.	16 15 58.18	2.12535	68.07	—26 13 20.3	—2.56555
17	322	I. L.	16 42 56.56	2.13418	68.81	—27 17 25.5	—2.43477
18	322	I. U.	17 10 24·36	2.14095	69.39	—28 1 45.9	—2.23173
18	323	I. L.	17 38 13.42	2.14532	69.78	—28 25 21.8	—1.81221
19	323	I. U.	18 6 14.36	2.14706	69.97	—28 27 34.2	+1.63368
19	324	I. L.	18 34 17.04	2.14622	69.94	—28 8 8.0	+2.17985
20	324	I. U.	19 2 11.73	2.14292	69.68	—27 27 12.4	+2.41084
20	325	I. L.	19 29 49.78	2.13751	69.25	—26 25 17.8	+2.55709
21	325	I. U.	19 57 4.44	2.13069	68.73	—25 3 15.4	+2.66155
21	326	I. L.	20 23 51.31	2.12280	68.15	—23 22 10.4	+2.74114
22	326	I. U.	20 50 8.61	2.11464	67.52	—21 23 18.4	+2.80388
22	327	I. L.	21 15 57.06	2.10684	66.91	—19 8 0.8	+2.85432
23	327	I. U.	21 41 19.57	2.10003	66.38	—16 37 46.4	+2.89548
23	328	I. L.	22 6 20.64	2.09472	65.98	—13 54 4.1	+2.92919
24	328	I. U.	22 31 6.88	2.09146	65.73	—10 58 26.4	+2.95673
24	329	I. L.	22 55 46.22	2.09072	65.66	— 7 52 32.2	+2.97885
25	329	I. U.	23 20 27.73	2.09272	65.80	— 4 38 1.8	+2.99592
25	330	I. L.	23 45 21.24	2.09781	66.18	— 1 16 51.8	+3.00820
26	331	I. U.	0 10 37.67	2.10599	66.80	+ 2 8 50.4	+3.01521
26	331	I. L.	0 36 28.50	2.11724	67.67	+ 5 36 37.2	+3.01681
27	332	I. U.	1 3 5.75	2.13146	68.79	+ 9 3 38.1	+3.01188
27	332	I. L.	1 30 41.18	2.14826	70.15	+12 26 32.8	+2.99754
28	333	I. U.	1 59 26.08	2.16699	71.71	+15 41 31.4	+2.97691
28	333	I. L.	2 29 29.46	2.18679	73.40	+18 44 20.1	+2.94229
29	334	I. U.	3 0 57.23	2.20659	75.13	+21 30 9.8	+2.89125
29	334	I. L.	3 33 50.06	2.22482	76.78	+23 54 6.2	+2.81734
30	335	I. U.	4 8 1.25	2.24023	78.20	+25 51 21.7	+2.70942
Dec. 1	335	II. L.	4 45 54.30	2.25139	79.23	+27 17 43.1	+2.54374
1	336	II. U.	5 21 49.99	2.25634	79.74	+28 10 3.4	+2.23404
2	336	II. L.	5 57 54.95	2.25493	79.63	+28 26 47.0	—0.75719
2	337	II. U.	6 33 37.44	2.24726	78.95	+28 8 5.4	—2.25400
3	337	II. L.	7 8 28.22	2.23386	77.71	+27 15 54.6	—2.53134

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	d.		h. m. s.		s.	° ′ ″	
Dec. 3	338	II. U.	7 42 4.50	2.21601	76.12	+25 53 24.6	—2.68248
4	338	II. L.	8 14 11.83	2.19501	74.26	+24 4 47.1	—2.77916
4	339	II. U.	8 44 44.12	2.17240	72.30	+21 54 26.3	—2.84417
5	339	II. L.	9 13 42.41	2.14947	70.40	+19 26 45.7	—2.88920
5	340	II. U.	9 41 12.63	2.12743	68.61	+16 45 45.6	—2.92022
6	340	II. L.	10 7 24.07	2.10714	66.98	+13 54 58.4	—2.94109
6	341	II. U.	10 32 27.65	2.08924	65.56	+10 57 26.0	—2.95429
7	341	II. L.	10 56 35.03	2.07408	64.39	+ 7 55 42.9	—2.96158
7	342	II. U.	11 19 57.70	2.06210	63.49	+ 4 51 58.9	—2.96409
8	342	II. L.	11 42 47.10	2.05323	62.83	+ 1 48 3.3	—2.96257
8	343	II. U.	12 5 13.95	2.04766	62.40	— 1 14 28.2	—2.95751
9	344	II. L.	12 27 28.49	2.04524	62.20	— 4 14 9.5	—2.94893
9	344	II. U.	12 49 40.26	2.04579	62.21	— 7 9 41.7	—2.93708
10	345	II. L.	13 11 58.23	2.04922	62.42	— 9 59 48.0	—2.92158
10	345	II. U.	13 34 30.83	2.05519	62.81	—12 43 11.1	—2.90197
11	346	II. L.	13 57 25.58	2.06333	63.38	—15 18 30.5	—2.87746
11	346	II. U.	14 20 49.29	2.07317	64.10	—17 44 22.5	—2.84706
12	347	II. L.	14 44 47.56	2.08433	64.91	—19 59 17.2	—2.80927
12	347	II. U.	15 9 24.67	2.09621	65.79	—22 1 40.4	—2.76178
13	348	II. L.	15 34 43.20	2.10823	66.70	—23 49 53.9	—2.70140
13	348	II. U.	16 0 43.57	2.11969	67.59	—25 22 18.3	—2.62289
14	349	II. L.	16 27 23.77	2.13001	68.41	—26 37 16.0	—2.51663
14	349	II. U.	16 54 39.29	2.13856	69.10	—27 33 17.2	—2.36229
15	350	II. L.	17 22 23.15	2.14483	69.62	—28 9 6.4	—2.10354
16	350	I. U.	17 48 6.21	2.14841	69.93	—28 23 46.6	—1.28638
16	351	I. L.	18 16 17.54	2.14931	70.00	—28 16 43.7	+1.95442
17	351	I. U.	18 44 26.86	2.14731	69.84	—27 47 51.3	+2.29791
17	352	I. L.	19 12 23.56	2.14282	69.48	—26 57 29.3	+2.48334
18	352	I. U.	19 39 58.70	2.13621	68.97	—25 46 22.6	+2.60821
18	353	I. L.	20 7 5.42	2.12792	68.33	—24 15 36.7	+2.69973
19	353	I. U.	20 33 39.47	2.11860	67.62	—22 26 33.7	+2.76975
19	354	I. L.	20 59 39.26	2.10914	66.89	—20 20 45.9	+2.82482
20	354	I. U.	21 25 5.90	2.10006	66.21	—17 59 51.6	+2.86895
20	355	I. L.	21 50 2.53	2.09202	65.61	—15 25 30.5	+2.90446
21	355	I. U.	22 14 34.33	2.08565	65.15	—12 39 25.3	+2.93298
21	356	I. L.	22 38 48.05	2.08135	64.85	— 9 43 16.5	+2.95574
22	356	I. U.	23 2 51.69	2.07961	64.75	— 6 38 45.2	+2.97341
22	357	I. L.	23 26 54.36	2.08081	64.85	— 3 27 34.9	+2.98661
23	357	I. U.	23 51 6.01	2.08497	65.19	— 0 11 33.8	+2.99522
23	358	I. L.	0 15 37.41	2.09251	65.78	+ 3 7 20.9	+2.99925
24	359	I. U.	0 40 40.00	2.10326	66.62	+ 6 27 0.6	+2.99838
24	359	I. L.	1 6 25.70	2.11701	67.71	+ 9 44 58.9	+2.99170
25	360	I. U.	1 33 6.46	2.13360	69.04	+12 58 26.3	+2.97804
25	360	I. L.	2 0 53.86	2.15232	70.58	+16 4 8.6	+2.95572
26	361	I. U.	2 29 58.20	2.17263	72.27	+18 58 26.5	+2.92220
26	361	I. L.	3 0 26.91	2.19326	74.04	+21 37 7.6	+2.87332
27	362	I. U.	3 32 23.00	2.21302	75.78	+23 55 44.6	+2.80279
27	362	I. L.	4 5 43.49	2.23045	77.33	+25 49 45.2	+2.69995
28	363	I. U.	4 40 17.36	2.24403	78.55	+27 14 48.6	+2.53950
28	363	I. L.	5 15 44.97	2.25244	79.34	+28 7 27.2	+2.24981

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	d.		h. m. s.		s.	° ′ ″	
Dec. 29	364	I. U.	5 51 39.22	2.25477	79.53	+28 25 23.5	+0.02858
29	364	I. L.	6 27 29.07	2.25071	79.11	+28 7 59.0	—2.24071
30	365	II. U.	7 5 20.21	2.24055	78.16	+27 16 20.6	—2.53145
31	365	II. L.	7 39 31.27	2.22531	76.74	+25 53 4.0	—2.68918
31	366	II. U.	8 12 20.99	2.20626	75.02	+24 2 9.7	—2.79024

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	d.		h. m. s.		s.	° ′ ″
Dec. 3	338	II. U.	7 42 4.50	2.21601	76.12	+25 53 24.6
4	338	II. L.	8 14 11.83	2.19501	74.26	+24 4 47.1
4	339	II. U.	8 44 44.12	2.17240	72.30	+21 54 26.3
5	339	II. L.	9 13 42.41	2.14947	70.40	+19 26 45.7
5	340	II. U.	9 41 12.63	2.12743	68.61	+16 45 45.6
6	340	II. L.	10 7 24.07	2.10714	66.98	+13 54 58.4
6	341	II. U.	10 32 27.65	2.08924	65.56	+10 57 26.0
7	341	II. L.	10 56 35.03	2.07408	64.39	+ 7 55 42.9
7	342	II. U.	11 19 57.70	2.06210	63.49	+ 4 51 58.9
8	342	II. L.	11 42 47.10	2.05335	62.83	+ 1 48 3.3
8	343	II. U.	12 5 13.95	2.04766	62.40	− 1 14 28.2
9	344	II. L.	12 27 25.49	2.04524	62.20	− 4 14 9.5
9	344	II. U.	12 49 40.26	2.04579	62.21	− 7 9 41.7
10	345	II. L.	13 11 58.23	2.04922	62.42	− 9 59 48.0
10	345	II. U.	13 34 30.83	2.05519	62.81	−12 43 11.1
11	346	II. L.	13 57 25.58	2.06333	63.35	−15 18 30.
11	346	II. U.	14 20 49.29	2.07317	64.10	−17 44 22.
12	347	II. L.	14 44 47.56	2.08435	64.91	−19 59 17
12	347	II. U.	15 9 24.67	2.09621	65.79	−22 1 4
13	348	II. L.	15 34 43.20	2.10823	66.70	−23 49 5
13	348	II. U.	16 0 43.57	2.11969	67.59	−25 22
14	349	II. L.	16 27 23.77	2.13001	68.41	−26 37
14	349	II. U.	16 54 39.29	2.13856	69.10	−27 3
15	350	II. L.	17 22 23.15	2.14463	69.62	−28
16	350	I. U.	17 48 6.21	2.14841	69.93	−28
16	351	I. L.	18 16 17.54	2.14931	70.00	−28
17	351	I. U.	18 44 26.56	2.14731	69.84	−27
17	352	I. L.	19 12 23.56	2.14282	69.48	−26
18	352	I. U.	19 39 58.70	2.13621	68.97	−2
18	353	I. L.	20 7 5.42	2.12792	68.33	−
19	353	I. U.	20 33 39.47	2.11860	67.62	−
19	354	I. L.	20 59 39.26	2.10914	66.89	−
20	354	I. U.	21 25 3.90	2.10006	66.21	−
20	355	I. L.	21 50 2.53	2.09202	65.61	−
21	355	I. U.	22 14 34.33	2.08565	65.15	−
21	356	I. L.	22 38 48.05	2.08135	64.85	
22	356	I. U.	23 2 51.69	2.07961	64.75	
22	357	I. L.	23 26 54.36	2.08081	64.85	
23	357	I. U.	23 51 6.01	2.08497	65.19	
23	358	I. L.	0 15 37.41	2.09251	65.78	
24	359	I. U.	0 40 40.00	2.10326	66.62	
24	359	I. L.	1 6 25.70	2.11701	67.71	
25	360	I. U.	1 33 6.46	2.13360	69.0	
25	360	I. L.	2 0 53.86	2.15232	70.5	
26	361	I. U.	2 29 58.20	2.17263	72.	
26	361	I. L.	3 0 26.91	2.19326	74.	
27	362	I. U.	3 33 23.00	2.21302	7	
27	362	I. L.	4 5 43.49	2.23045	7	
28	363	I. U.	4 40 17.36	2.24403	7	
28	363	I. L.	5 15 44.97	2.25244		

Mean Solar Date.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Dec. 29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	.002
	—.010
	.018
	.017
	—.009
	+.002
	.026
6	.030
.02	.032
.91	.032
29.79	.029
30.50	.021
30.96	+.009
+ 23° 16′	
5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	35 Piscium.	*d* Piscium.	44 Piscium.	13 Ceti.	δ Piscium.	20 Ceti.	
	$0^{\text{h.}}\ 7^{\text{m.}}$	$0^{\text{h.}}\ 13^{\text{m.}}$	$0^{\text{h.}}\ 18^{\text{m.}}$	$0^{\text{h.}}\ 27^{\text{m.}}$	$0^{\text{h.}}\ 41^{\text{m.}}$	$0^{\text{h.}}\ 45^{\text{m.}}$	
d.	s.	s.	s.	s.	s.	s.	
2	36.53	14.07	4.03	53.05	15.69	41.90	—.012
29	36.28	13.81	3.79	52.79	15.41	41 62	.009
57	36.14	13.67	3.63	52.62	15.21	41.42	—.004
112	36.59	14.09	4.04	52.96	15.49	41.67	+.016
139	37.27	14.73	4.65	53.55	16.05	42.22	.025
167	38.11	15.57	5.48	54.37	16.87	43.02	.031
194	38.98	16.46	6.37	55.26	17.77	43.89	.030
221	39.73	17.21	7.12	56.03	18.55	44.69	.025
249	40.26	17.76	7.68	56.62	19.16	45.31	.015
276	40.49	18.01	7.95	56.90	19.49	45.65	+.007
303	40.49	18.02	7.97	56.95	19.58	45.74	—.001
330	40.31	17.85	7.81	56.81	19.47	45.64	.007
358	40.04	17.59	7.55	56.55	19.23	45.40	—.010
Dec. =	+ 8° 0′	+ 7° 24′	+ 1° 9′	— 4° 23′	+ 6° 48′	— 1° 55′	
Mag. =	6	6.5	6	6.5	4.5	5.6	
	ε Piscium.	*e* Piscium.	ζ¹ Piscium.	40 Ceti.	μ Piscium.	η Piscium.	
	$0^{\text{h.}}\ 55^{\text{m.}}$	$1^{\text{h.}}\ 0^{\text{m.}}$	$1^{\text{h.}}\ 6^{\text{m.}}$	$1^{\text{h.}}\ 9^{\text{m.}}$	$1^{\text{h.}}\ 22^{\text{m.}}$	$1^{\text{h.}}\ 23^{\text{m.}}$	
	s.	s.	s.	s.	s.	s.	
3	31.37	60.24	15.64	39.86	41.69	50.11	—.011
30	31.09	59.95	15.35	39.57	41.39	49.80	.010
58	30.86	59.71	15.10	39.31	41.12	49.51	—.006
113	31.08	59.90	15.25	39.45	41.20	49.56	+.013
140	31.64	60.43	15.77	39.96	41.69	50.09	.024
168	32.45	61.25	16.58	40.74	42.46	50.89	.030
195	33.33	62.12	17.46	41.59	43.32	51.77	.031
222	34.12	62.92	18.28	42.43	44.15	52.62	.027
250	34.76	63.57	18.93	43.08	44.84	53.32	.019
277	35.11	63.94	19.32	43.47	45.25	53.76	.010
304	35.23	64.07	19.47	43.61	45.45	53.97	+.002
331	35.15	64.00	19.41	43.54	45.43	53.95	—.005
359	34.91	63.77	19.20	43.30	45.23	53.75	—.011
Dec. =	+ 7° 7′	+ 4° 54′	+ 6° 49′	— 3° 2′	+ 5° 24′	+ 14° 36′	
Mag. =	4	6.5	5.4	6	5	4.3	
	π Piscium.	ν Piscium.	ο Piscium.	ι Arietis.	ξ¹ Ceti.	θ Arietis.	
	$1^{\text{h.}}\ 29^{\text{m.}}$	$1^{\text{h.}}\ 33^{\text{m.}}$	$1^{\text{h.}}\ 37^{\text{m.}}$	$1^{\text{h.}}\ 49^{\text{m.}}$	$2^{\text{h.}}\ 5^{\text{m.}}$	$2^{\text{h.}}\ 10^{\text{m.}}$	
	s.	s.	s.	s.	s.	s.	
4	31.33	59.57	50.87	32.79	25.60	10.85	—.012
31	31.01	59.27	50.55	32.46	25.33	10.52	.011
58	30.73	58.98	50.26	32.14	25.01	10.17	.008
86	30.61	58.85	50.12	31.96	24.80	9.94	—.001
141	31.29	59.48	50.75	32.56	25.29	10.43	+.022
168	32.05	60.21	51.49	33.30	25.98	11.15	.029
196	32.95	61.11	52.37	34.22	26.85	12.06	.031
223	33.78	61.94	53.21	35.08	27.69	12.94	.028
250	34.46	62.62	53.90	35.81	28.43	13.71	.022
278	34.93	63.09	54.39	36.34	28.98	14.30	.011
305	35.14	63.30	54.61	36.61	29.28	14.64	+.005
332	35.13	63.31	54.63	36.66	29.37	14.75	—.002
359	34.96	63.13	54.47	36.51	29.25	14.64	—.008
Dec. =	+ 11° 25′	+ 4° 46′	+ 8° 26′	+ 17° 7′	+ 8° 10′	+ 19° 14′	
Mag. =	6	5.4	4	6	4.5	6.5	
	ξ² Ceti.	38 Arietis.	π Arietis.	ρ³ Arietis.	ε Arietis.	53 Arietis.	
	$2^{\text{h.}}\ 20^{\text{m.}}$	$2^{\text{h.}}\ 37^{\text{m.}}$	$2^{\text{h.}}\ 41^{\text{m.}}$	$2^{\text{h.}}\ 48^{\text{m.}}$	$2^{\text{h.}}\ 51^{\text{m.}}$	$2^{\text{h.}}\ 59^{\text{m.}}$	
	s.	s.	s.	s.	s.	s.	
5	33.92	10.73	19.44	22.60	2.93	23.35	—.010
32	33.60	10.42	19.13	22.29	2.61	23.08	.013
59	33.25	10.05	18.75	21.90	2.21	22.69	.012
87	33.03	9.79	18.47	21.61	1.91	22.38	—.005
142	33.46	10.15	18.82	21.92	2.22	22.63	+.017
169	34.15	10.82	19 50	22.59	2.89	23.28	.028
197	35.00	11.66	20.35	23.43	3.74	24.10	.031
224	35.85	12.50	21.23	24.32	4.65	24.99	.031
251	36.59	13.29	22.02	25.12	5.47	25.81	.026
278	37.16	13.91	22.67	25.79	6.16	26.50	.019
305	37.50	14.31	23.09	26.23	6.61	26.96	.011
333	37.62	14.48	23.28	26.44	6.83	27.20	+.003
360	37.52	14.41	23.22	26.39	6.79	27.18	—.006
Dec. =	+ 7° 49′	+ 11° 50′	+ 16° 52′	+ 17° 27′	+ 20° 46′	+ 17° 19′	
Mag. =	4	5	6.5	6	4.5	6	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	δ Arietis.	ζ Arietis.	τ^1 Arietis.	9 Tauri.	17 Tauri.	η Tauri.	
	$3^{h.}\ 3^{m.}$	$3^{h.}\ 6^{m.}$	$3^{h.}\ 12^{m.}$	$3^{h.}\ 28^{m.}$	$3^{h.}\ 36^{m.}$	$3^{h.}\ 38^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
5	27.98	41.73	59.15	34.34	24.20	60.11	—.005
33	27.66	41.41	58.83	34.05	23.90	59 82	.014
60	27.26	41.00	58.42	33.63	23.47	59.39	.016
87	26.94	40.68	58.09	33.26	23.10	59.01	—.009
115	26.89	40.62	58.01	33.14	22.95	58.86	+.002
170	27.82	41.55	58.91	33.97	23.75	59.65	.027
197	28.65	42.38	59.73	34.79	24.56	60.45	.033
225	29.58	43.31	60.67	35.73	25.50	61.39	.034
252	30.41	44.15	61.51	36.60	26.38	62.27	.031
279	31.11	44.86	62.23	37.37	27.17	63.07	.025
306	31.58	45.34	62.74	37.92	27.75	63.65	.016
333	31.82	45.60	63.01	38.24	28.10	64.01	+.006
361	31.82	45.62	63.03	38.30	28.18	64.10	—.004
Dec. =	+ 19° 11′	+ 20° 31′	+ 20° 38′	+ 22° 45′	+ 23° 40′	+ 23° 40′	
Mag. =	4.5	4.5	5	6	4	3	
	A^1 Tauri.	ω^2 Tauri.	δ^1 Tauri.	υ^1 Tauri.	ε Tauri.	α Tauri.	
	$3^{h.}\ 56^{m.}$	$4^{h.}\ 8^{m.}$	$4^{h.}\ 14^{m.}$	$4^{h.}\ 17^{m.}$	$4^{h.}\ 20^{m.}$	$4^{h.}\ 27^{m.}$	
	s.	s.	s.	s.	s.	s.	
6	15.53	54.03	42.36	46.23	17.14	44.11	—.004
33	15.28	53.79	42.13	46.00	16.93	43.91	.012
61	14.84	53.36	41.71	45.57	16.51	43.49	.015
88	14.44	52.96	41.31	45.14	16.09	43.07	.011
116	14.27	52.76	41.10	44.92	15.87	42.84	—.002
171	14.98	53.39	41.69	45.52	16.44	43.36	+.022
198	15.75	54.13	42.41	46.26	17.15	44.05	.028
225	16.64	55.00	43.25	47.13	18.01	44.88	.032
253	17.55	55.91	44.15	48.06	18.91	45.77	.031
280	18.33	56.70	44.93	48.87	19.71	46.57	.026
307	18.97	57.36	45.60	49.57	20.39	47.25	.020
334	19.36	57.79	46.03	50.03	20.85	47.72	.011
362	19.48	57.95	46.20	50.21	21.04	47.92	+.001
Dec. =	+ 21° 41′	+ 20° 13′	+ 17° 12′	+ 22° 29′	+ 18° 52′	+ 16° 13′	
Mag. =	5.4	6.5	4	5.4	4.3	1	
	τ Tauri.	*i* Tauri.	ι Aurigæ.	ι Tauri.	11 Orionis.	*n* Tauri.	
	$4^{h.}\ 33^{m.}$	$4^{h.}\ 43^{m.}$	$4^{h.}\ 47^{m.}$	$4^{h.}\ 54^{m.}$	$4^{h.}\ 56^{m.}$	$5^{h.}\ 10^{m.}$	
	s.	s.	s.	s.	s.	s.	
7	40.96	1.69	42.25	34.13	25.09	42.38	—.003
34	40.74	1.50	42.04	33.97	24.92	42.24	.011
61	40.31	1.08	41.56	33.55	24.52	41.83	.016
89	39.88	0.65	41.07	33.10	24.09	41.38	.013
116	39.63	0.40	40.78	32.82	23.81	41.07	—.006
171	40.16	0.85	41.26	33.23	24.19	41.40	+.019
199	40.89	1.55	42.02	33.92	24.84	42.04	.027
226	41.74	2.37	42.94	34.74	25.64	42.85	.031
253	42.64	3.25	42.92	35.63	26.49	43.75	.034
280	43.51	4.10	44.88	36.51	27.34	44.63	.030
307	44.22	4.80	45.69	37.25	28.05	45.41	.024
335	44.73	5.33	46.30	37.82	28.61	46.03	.015
362	44.95	5.57	46.57	38.09	28.87	46.34	+.003
Dec. =	+ 22° 41′	+ 18° 36′	+ 32° 56′	+ 21° 23′	+ 15° 12′	+ 21° 57′	
Mag. =	4.5	5.6	3	5	5	6	
	β Tauri.	*o* Tauri.	ζ Tauri.	129 Tauri.	136 Tauri.	1 Geminorum.	
	$5^{h.}\ 17^{m.}$	$5^{h.}\ 19^{m.}$	$5^{h.}\ 29^{m.}$	$5^{h.}\ 38^{m.}$	$5^{h.}\ 44^{m.}$	$5^{h.}\ 55^{m.}$	
	s.	s.	s.	s.	s.	s.	
7	16.54	3.98	7.25	33.32	21.74	26.98	+.002
35	16.40	3.85	7.15	33.24	21.67	26.93	—.010
62	15.99	3.46	6.77	32.88	21.29	26.58	.018
89	15.50	3.00	6.31	32.43	20.80	26.11	.017
117	15.16	2.67	5.97	32.09	20.42	25.73	—.009
144	15.14	2.66	5.92	32.02	20.34	25.63	+.002
199	16.14	3.59	6.81	32.83	21.19	26.39	.026
227	17.01	4.42	7.61	33.59	22.00	27.16	.030
254	17.98	5.30	8.48	34.42	22.91	28.02	.032
280	18.96	6.17	9.35	35.27	23.83	28.91	.032
308	19.71	6.98	10.18	36.08	24.73	29.79	.029
335	20.36	7.61	10.81	36.72	25.43	30.50	.021
363	20.72	7.94	11.20	37.10	25.87	30.96	+.009
Dec. =	+ 28° 29′	+ 21° 49′	+ 21° 3′	+ 15° 46′	+ 27° 34′	+ 23° 16′	
Mag. =	2	6	3.4	6	5	5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	η Geminorum.	κ Aurigæ.	μ Geminorum.	ν Geminorum.	49 Aurigæ.	ε Geminorum.	
	$6^{h.}$ $6^{m.}$	$6^{h.}$ $6^{m.}$	$6^{h.}$ $14^{m.}$	$6^{h.}$ $20^{m.}$	$6^{h.}$ $26^{m.}$	$6^{h.}$ $35^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
8	16.04	17.34	19.87	29.62	13.07	9.41	+.006
35	16.03	17.32	19.90	29.64	13.09	9.47	—.006
63	15.68	16.96	19.54	29.32	12.78	9.16	.014
90	15.21	16.46	19.08	28.87	12.30	8.70	.016
117	14.84	16.06	18.70	28.48	11.89	8.29	—.011
145	14.72	15.92	18.56	28.33	11.71	8.10	+.001
200	15.44	16.69	19.24	28.97	12.36	8.69	.018
227	16.16	17.45	29.94	29.65	13.07	9.36	.028
254	17.00	18.34	20.77	30.46	13.92	10.18	.033
281	17.92	19.32	21.70	31.37	14.89	11.12	.034
308	18.78	20.24	22.57	32.24	15.81	12.03	.032
336	19.54	21.04	23.34	33.00	16.64	12.86	.024
363	20.00	21.52	23.82	33.50	17.18	13.42	+.010
Dec. =	+ 22° 33′	+ 29° 33′	+ 22° 35′	+ 20° 18′	+ 28° 8′	+ 25° 16′	
Mag. =	3.4	5.4	3	5.4	6.5	3.4	
	ω Geminorum.	ζ Geminorum.	τ Geminorum.	δ Geminorum.	ι Geminorum.	$α^2$ Geminor.	
	$6^{h.}$ $53^{m.}$	$6^{h.}$ $55^{m.}$	$7^{h.}$ $2^{m.}$	$7^{h.}$ $11^{m.}$	$7^{h.}$ $16^{m.}$	$7^{h.}$ $25^{m.}$	
	s.	s.	s.	s.	s.	s.	
9	43.35	38.96	3.60	36.28	52.05	29.88	+.009
36	43.44	39.05	3.71	36.41	52.20	30.06	—.003
63	43.17	38.78	3.45	36.19	51.98	29.85	.013
91	42.70	38.32	2.95	35.73	51.50	29.36	.016
118	42.29	37.94	2.51	35.33	51.07	28.94	.011
146	42.08	39.74	2.27	35.08	50.80	28.61	—.002
173	42.18	37.82	2.35	35.14	50.85	28.63	+.009
228	43.22	38.82	3.40	36.07	51.79	29.56	.026
255	44.01	39.59	4.21	36.82	52.57	30.35	.031
282	44.94	40.48	5.18	37.72	53.50	31.31	.033
309	45.85	41.38	6.15	38.62	54.46	32.30	.032
336	46.68	42.19	7.04	39.47	55.35	33.25	.026
364	47.30	42.79	7.71	40.12	56.05	33.99	+.015
Dec. =	+ 24° 25′	+ 20° 47′	+ 30° 29′	+ 22° 15′	+ 28° 5′	+ 32° 12′	
Mag. =	6	4	5.4	3.4	4	2.1	
	β Geminorum.	φ Geminorum.	6 Cancri.	12 Cancri.	$ζ^1$ Cancri	λ Cancri.	
	$7^{h.}$ $36^{m.}$	$7^{h.}$ $44^{m.}$	$7^{h.}$ $54^{m.}$	$8^{h.}$ $0^{m.}$	$8^{h.}$ $4^{m.}$	$8^{h.}$ $12^{m.}$	
	s.	s.	s.	s.	s.	s.	
10	35.18	46.00	45.23	44.12	1.86	3.10	+.015
37	35.38	46.21	45.47	44.37	2.11	3.38	+.002
64	35.19	46.04	45.33	44.25	2.00	3.29	—.009
92	34.75	45.62	44.91	43.88	1.63	2.91	.015
119	34.29	45.18	44.47	43.48	1.22	2.49	.013
146	34.02	44.89	44.17	43.20	0.94	2.18	—.006
174	34.02	44.87	44.12	43.15	0.88	2.10	+.003
229	34.87	45.67	44.87	43.79	1.52	2.73	.021
256	35.62	46.39	45.57	44.41	2.15	3.36	.027
283	36.53	47.29	46.46	45.22	2.97	4.21	.032
310	37.50	48.24	47.42	46.11	3.87	5.14	.033
337	38.43	49.16	48.37	46.96	4.75	6.07	.030
365	39.16	49.91	49.15	47.69	5.50	6.87	+.023
Dec. =	+ 28° 22′	+ 27° 8′	+ 28° 12′	+ 14° 4′	+ 18° 5′	+ 24° 28′	
Mag. =	1.2	5	5	6	5.4	6	
	θ Cancri.	γ Cancri.	δ Cancri.	$ϱ^3$ Cancri.	α Cancri.	κ Cancri.	
	$8^{h.}$ $23^{m.}$	$8^{h.}$ $35^{m.}$	$8^{h.}$ $36^{m.}$	$8^{h.}$ $47^{m.}$	$8^{h.}$ $50^{m.}$	$9^{h.}$ $0^{m.}$	
	s.	s.	s.	s.	s.	s.	
10	27.68	1.76	34.63	6.78	41.17	1.35	+.020
38	27.99	2.11	34.98	7.18	41.43	1.64	+.006
65	27.91	2.06	34.93	7.16	41.42	1.66	—.007
92	27.58	1.75	34.62	6.85	41.15	1.40	.013
120	27.16	1.32	34.21	6.40	40.76	1.02	.013
147	26.87	1.01	33.90	6.06	40.46	0.71	—.008
175	26.78	0.90	33.79	5.91	40.32	0.56	.000
202	26.92	1.03	33.92	6.01	40.40	0.62	+.009
257	27.93	1.98	34.84	6.95	41.22	1.39	.022
284	28.73	2.78	35.62	7.76	41.95	2.10	.030
311	29.63	3.70	36.51	8.70	42.81	2.94	.033
338	30.54	4.62	37.43	9.69	43.71	3.83	.031
365	31.29	5.42	38.21	10.55	44.49	4.64	+.021
Dec. =	+ 18° 35′	+ 21° 59′	+ 18° 41′	+ 28° 28′	+ 12° 25′	+ 11° 15′	
Mag. =	6	4.5	4	6	4	5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ξ Cancri. $9^{h.}\ 1^{m.}$	83 Cancri. $9^{h.}\ 11^{m.}$	λ Leonis. $9^{h.}\ 23^{m.}$	ξ Leonis. $9^{h.}\ 24^{m.}$	*o* Leonis. $9^{h.}\ 33^{m.}$	ι Leonis. $9^{h.}\ 37^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
11	9.35	1.03	34.75	15.35	32.33	45.08	+.018
38	9.74	1.43	35.20	15.77	32.78	45.57	+.009
66	9.75	1.47	35.28	15.84	32.87	45.69	—.003
93	9.47	1.22	35.04	15.62	32.68	45.48	.011
121	9.07	0.84	34.66	15.27	32.32	45.12	.013
148	8.74	0.52	34.32	14.96	32.02	44.76	.009
175	8.59	0.36	34.13	14.78	31.84	44.55	—.003
203	8.66	0.41	34.15	14.80	31.84	44.54	+.004
230	8.96	0.68	34.37	15.01	32.02	44.72	.012
257	9.47	1.14	34.83	15.43	32.41	45.14	.021
284	10.25	1.87	35.56	16.12	33.08	45.84	.028
311	11.11	2.70	36.39	16.92	33.86	46.67	.033
339	12.10	3.67	37.40	17.86	34.80	47.68	+.036
Dec. =	+ 22° 37′	+ 18° 19′	+ 23° 36′	+ 11° 56′	+ 10° 33′	+ 24° 26′	
Mag. =	5	6	5.4	6	4.3	3	
	ν Leonis. $9^{h.}\ 50^{m.}$	η Leonis. $9^{h.}\ 59^{m.}$	α Leonis. $10^{h.}\ 0^{m.}$	γ^1 Leonis. $10^{h.}\ 12^{m.}$	45 Leonis. $10^{h.}\ 20^{m.}$	ϱ Leonis. $10^{h.}\ 25^{m.}$	
	s.	s.	s.	s.	s.	s.	
12	32.77	33.08	46.30	6.22	6.62	17.82	+.025
39	33.26	33.60	46.82	6.79	7.19	18.39	+.012
67	33.39	33.77	46.98	6.99	7.40	18.63	.000
94	33.22	33.61	46.84	6.87	7.30	18.53	—.008
121	32.90	33.30	46.54	6.56	7.03	18.27	.011
149	32.57	32.97	46.22	6.23	6.72	17.96	.010
176	32.38	32.76	46.00	5.99	6.49	17.74	—.005
204	32.33	32.69	45.93	5.89	6.38	17.62	+.001
231	32.51	32.84	46.08	6.01	6.48	17.70	.009
258	32.86	33.18	46.41	6.32	6.75	17.95	.017
285	33.47	33.78	46.99	6.90	7.29	18.48	.025
312	34.27	34.58	47.78	7.69	8.04	19.22	.032
340	35.23	35.55	48.73	8.67	8.98	20.15	+.037
Dec. =	+ 13° 8′	+ 17° 27′	+ 12° 40′	+ 20° 34′	+ 10° 29′	+ 10° 3′	
Mag. =	5	3.4	1.2	2	6	4	
	37 Sextantis. $10^{h.}\ 38^{m.}$	*l* Leonis. $10^{h.}\ 41^{m.}$	*c* Leonis. $10^{h.}\ 53^{m.}$	χ Leonis. $10^{h.}\ 57^{m.}$	*n* Leonis. $11^{h.}\ 8^{m.}$	σ Leonis. $11^{h.}\ 13^{m.}$	
	s.	s.	s.	s.	s.	s.	
13	39.72	45.11	20.83	39.16	23.68	46.42	+.024
40	40.30	45.70	21.44	39.78	24.34	47.07	.017
68	40.55	45.96	21.73	40.09	24.68	47.42	+.005
95	40.49	45.90	21.70	40.07	24.69	47.45	—.004
122	40.25	45.67	21.49	39.87	24.50	47.28	.009
150	39.96	45.38	21.22	39.59	24.23	47.02	.009
177	39.73	45.14	20.98	39.35	23.97	46.78	.007
205	39.61	45.01	20.83	39.19	23.79	46.59	—.003
232	39.63	45.03	20.82	39.18	23.75	46.54	+.003
259	39.86	45.25	21.01	39.36	23.95	46.77	.011
286	40.36	45.75	21.47	39.80	24.32	47.08	.021
313	41.09	46.48	22.17	40.50	25.01	47.74	.029
341	42.02	47.42	23.10	41.42	25.94	48.64	+.035
Dec. =	+ 7° 8′	+ 11° 18′	+ 6° 52′	+ 8° 7′	+ 14° 5′	+ 6° 49′	
Mag. =	6	5	5	5	6	4	
	ι Leonis. $11^{h.}\ 16^{m.}$	τ Leonis. $11^{h.}\ 20^{m.}$	ν Virginis. $11^{h.}\ 38^{m.}$	β Virginis. $11^{h.}\ 43^{m.}$	π Virginis. $11^{h.}\ 53^{m.}$	*o* Virginis. $11^{h.}\ 57^{m.}$	
	s.	s.	s.	s.	s.	s.	
14	28.67	35.70	31.34	15.45	33.36	56.14	+.028
41	29.34	36.38	32.03	16.15	34.09	56.88	.020
69	29.68	36.73	32.44	16.56	34.53	57.33	+.009
96	29.71	36.76	32.52	16.66	34.65	57.47	—.001
123	29.52	36.59	32.40	16.55	34.56	57.38	.007
151	29.26	36.35	32.16	16.32	34.34	57.17	.009
178	29.01	36.11	31.91	16.08	34.10	56.92	.008
206	28.83	35 93	31.70	15.86	33.86	56.69	—.006
233	28.78	35.86	31.60	15.75	33.74	56.55	.000
260	28.92	35.99	31.68	15.82	33.77	56.57	+.008
287	29.33	36.38	32.02	16.15	34.08	56.86	.017
314	29.99	37.03	32.64	16.75	34.66	57.44	.026
341	30.86	37.88	33.47	16.58	35.48	58.25	+.033
Dec. =	+ 11° 19′	+ 3° 39′	+ 7° 20′	+ 2° 34′	+ 7° 25′	+ 9° 32′	
Mag. =	4	5	4.5	3.4	4.5	4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	Piazzi xii. 6. $12^{h.}\ 4^{m.}$	13 Virginis. $12^{h.}\ 11^{m.}$	η Virginis. $12^{h.}\ 12^{m.}$	*c* Virginis. $12^{h.}\ 13^{m.}$	*q* Virginis. $12^{h.}\ 26^{m.}$	γ Virginis. $12^{h.}\ 34^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
15	21.82	20.95	35.87	5.86	24.45	25.35	+.029
42	22.56	21.73	36.61	6.61	25.22	26.13	.022
70	23.01	22.20	37.09	7.09	25.73	26.66	.012
97	23.15	22.36	37.25	7.26	25.93	26.89	+.002
124	23.09	22.31	37.20	7.21	25.92	26.89	—.004
152	22.89	22.13	37.03	7.03	25.77	26.76	.008
179	22.64	21.89	36.78	6.78	25.52	26.50	.009
206	22.41	21.65	36.55	6.55	25.28	26.27	.007
234	22.26	21.49	36.38	6.38	25.08	26.06	—.003
261	22.28	21.49	36.38	6.37	25.03	26.00	+.005
288	22.56	21.74	36.63	6.63	25.25	26.20	.015
315	23.13	22.30	37.19	7.18	25.79	26.70	.025
342	23.95	23.11	38.00	7.99	26.59	27.48	+.033
Dec. =	+ 4° 51′	+ 0° 1′	+ 0° 8′	+ 4° 7′	— 8° 39′	— 0° 40′	
Mag. =	6.7	6	3.4	5	6	3.2	
	38 Virginis. $12^{h.}\ 45^{m.}$	ψ Virginis. $12^{h.}\ 46^{m.}$	δ Virginis. $12^{h.}\ 48^{m.}$	θ Virginis. $13^{h.}\ 2^{m.}$	α Virginis. $13^{h.}\ 17^{m.}$	ζ Virginis. $13^{h.}\ 27^{m.}$	
	s.	s.	s.	s.	s.	s.	
16	52.33	55.49	24.43	33.16	39.92	24.74	+.033
43	53.11	56.28	25.22	33.97	40.75	25.57	.026
71	53.66	56.83	25.78	34.59	41.41	26.24	.016
98	53.91	57.09	26.03	34.86	41.72	26.57	+.006
125	53.94	57.12	26.06	34.93	41.84	26.71	—.001
153	53.81	56.99	25.93	34.83	41.77	26.65	.005
180	53.59	56.77	25.71	34.63	41.58	26.47	.008
207	53.34	56.52	25.45	34.38	41.32	26.22	.009
235	53.11	56.28	25.22	34.11	41.03	25.92	—.007
262	53.03	56.19	25.13	33.99	40.88	25.75	.000
289	53.21	56.37	25.30	34.13	40.97	25.81	+.011
316	53.70	56.86	25.78	34.59	41.39	26.19	.022
343	54.47	57.64	26.54	35.35	42.13	26.88	+.032
Dec. =	— 2° 47′	— 8° 46′	+ 4° 10′	— 4° 46′	— 10° 25′	+ 0° 8′	
Mag. =	6	5	3	4.5	1	3.4	
	m Virginis. $13^{h.}\ 34^{m.}$	86 Virginis. $13^{h.}\ 38^{m.}$	89 Virginis. $13^{h.}\ 42^{m.}$	94 Virginis. $13^{h.}\ 58^{m.}$	ϰ Virginis. $14^{h.}\ 5^{m.}$	λ Virginis. $14^{h.}\ 11^{m.}$	
	s.	s.	s.	s.	s.	s.	
17	6.66	19.40	6.37	43.62	16.23	22.44	+.032
44	7.50	20.26	7.25	44.49	17.09	23.33	.028
72	8.15	20.92	7.94	45.20	17.81	24.07	.020
99	8.53	21.32	8.35	45.64	18.27	24.55	.011
126	8.68	21.48	8.53	45.85	18.50	24.80	+.004
154	8.64	21.46	8.52	45.88	18.54	24.86	—.003
181	8.47	21.28	8.34	45.73	18.41	24.74	.008
209	8.19	21.00	8.05	45.46	18.14	24.46	.010
236	7.91	20.71	7.74	45.15	17.82	24.14	.009
263	7.72	20.53	7.53	44.92	17.58	23.89	—.004
290	7.78	20.56	7.57	44.91	17.55	23.84	+.006
317	8.17	20.94	7.95	45.23	17.86	24.14	.019
344	8.88	21.65	8.67	45.89	17.50	24.78	+.029
Dec. =	— 7° 59′	— 11° 42′	— 17° 25′	— 8° 12′	— 9° 36′	— 12° 42′	
Mag. =	6	6	5	6	4.5	5.4	
	μ Virginis. $14^{h.}\ 35^{m.}$	5 Libræ. $14^{h.}\ 38^{m.}$	μ Libræ. $14^{h.}\ 41^{m.}$	α Libræ. $14^{h.}\ 42^{m.}$	ξ^2 Libræ. $14^{h.}\ 49^{m.}$	20 Libræ. $14^{h.}\ 55^{m.}$	
	s.	s.	s.	s.	s.	s.	
18	31.46	4.63	28.81	58.08	0.50	42.01	+.032
45	32.33	5.53	29.71	58.98	1.39	42.97	.031
73	33.07	6.31	30.50	59.77	2.18	43.83	.025
100	33.60	6.86	31.08	60.32	2.74	44.45	.016
127	33.90	7.18	31.38	60.66	3.09	44.85	+.008
155	34.01	7.31	31.51	60.78	3.23	45.04	.000
182	33.89	7.20	31.40	60.68	3.15	44.95	—.006
210	33.65	6.96	31.17	60.43	2.91	44.70	.010
237	33.32	6.61	30.84	60.08	2.57	44.32	.012
264	33.02	6.30	30.51	59.75	2.25	43.95	—.008
291	32.93	6.21	30.41	59.64	2.13	43.81	+.002
318	33.16	6.44	30.64	59.86	2.33	44.02	.015
345	33.74	7.05	31.23	60.45	2.89	44.62	+.023
Dec. =	— 5° 2′	— 14° 51′	— 13° 33′	— 15° 27′	— 10° 50′	— 24° 43′	
Mag. =	4	6	6	2:3	6	3.4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ι^1 Libræ. $15^{h.}\ 4^{m.}$	ζ^1 Libræ. $15^{h.}\ 20^{m.}$	γ Libræ. $15^{h.}\ 27^{m.}$	$\varkappa$ Libræ. $15^{h.}\ 33^{m.}$	η Libræ. $15^{h.}\ 36^{m.}$	λ Libræ. $15^{h.}\ 45^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
19	4.15	11.33	31.31	42.19	1.35	1.74	+.037
46	5.08	12.25	32.22	43.12	2.26	2.66	.032
74	5.92	13.09	33.07	44.00	3.12	3.57	.025
101	6.51	13.71	33.69	44.66	3.77	4.25	.020
128	6.93	14.17	34.16	45.16	4.26	4.77	.013
156	7.12	14.39	34.40	45.43	4.53	5.07	+.004
183	7.07	14.38	34.41	45.44	4.55	5.11	—.004
211	6.82	14.15	34.19	45.23	4.34	4.91	.012
238	6.45	13.78	33.83	44.86	3.98	4.55	.014
265	6.10	13.42	33.45	44.46	3.60	4.14	.010
292	5.95	13.24	33.26	44.25	3.38	3.91	—.001
319	6.10	13.39	33.38	44.37	3.49	3.99	+.011
346	6.61	13.89	33.87	44.86	3.96	4.44	+.023
Dec. =	— 19° 15′	— 16° 13′	— 14° 19′	— 19° 13′	— 15° 14′	— 19° 44′	
Mag. =	5.4	4	4.5	5	6	6	
	ϱ Scorpii. $15^{h.}\ 48^{m.}$	δ Scorpii. $15^{h.}\ 51^{m.}$	β^1 Scorpii. $15^{h.}\ 57^{m.}$	σ Scorpii. $16^{h.}\ 12^{m.}$	α Scorpii. $16^{h.}\ 20^{m.}$	τ Scorpii. $16^{h.}\ 26^{m.}$	
	s.	s.	s.	s.	s.	s.	
20	2.96	52.31	6.94	29.30	37.84	58.25	+.034
47	3.95	53.25	7.86	30.25	38.79	59.25	.034
75	4.90	54.16	8.76	31.19	39.75	60.22	.031
102	5.66	54.89	9.49	31.97	40.55	61.04	.025
129	6.20	55.41	10.01	32.57	41.17	61.69	.018
157	6.52	55.73	10.33	32.95	41.59	62.13	+.009
184	6.56	55.82	10.40	33.06	41.71	62.27	—.001
211	6.25	55.59	10.22	32.90	41.58	62.13	.010
238	5.95	55.22	9.85	32.52	41.19	61.76	.015
265	5.51	54.80	9.44	32.07	40.73	61.29	.012
292	5.24	54.54	9.18	31.76	40.41	60.95	—.005
320	5.34	54.62	9.24	31.79	40.41	60.93	+.006
347	5.84	55.09	9.68	32.21	40.81	61.32	+.017
Dec. =	— 28° 48′	— 22° 13′	— 19° 24′	— 25° 15′	— 26° 6′	— 27° 55′	
Mag. =	5.4	2.3	2	3.4	1.2	3.4	
	24 Scorpii. $16^{h.}\ 33^{m.}$	20 Ophiuchi. $16^{h.}\ 41^{m.}$	η Ophiuchi. $17^{h.}\ 2^{m.}$	A Ophiuchi. $17^{h.}\ 6^{m.}$	ξ Ophiuchi. $17^{h.}\ 12^{m.}$	θ Ophiuchi. $17^{h.}\ 13^{m.}$	
	s.	s.	s.	s.	s.	s.	
21	17.56	54.75	9.86	32.60	25.17	12.76	+.028
48	18.45	55.60	10.75	33.52	26.04	13.65	.032
75	19.33	56.47	11.58	34.45	26.94	14.58	.031
103	20.12	57.23	12.41	35.35	27.81	15.47	.028
130	20.73	57.83	13.07	36.08	28.52	16.22	.021
157	21.13	58.24	13.53	36.60	29.03	16.73	.013
185	21.28	58.40	13.76	36.84	29.28	17.00	+.004
212	21.15	58.28	13.69	36.78	29.23	16.95	—.007
239	20.81	57.95	13.37	36.45	28.92	16.63	.014
266	20.37	57.54	12.93	35.97	28.47	16.16	.015
293	20.06	57.20	12.58	35.58	28.09	15.77	—.009
321	20.03	57.15	12.48	35.48	28.07	15.65	+.003
348	20.39	57.46	12.75	35.76	28.23	15.71	+.015
Dec. =	— 17° 28′	— 10° 32′	— 15° 33′	— 26° 23′	— 20° 57′	— 24° 51′	
Mag. =	5	5	2.3	5	5	3.4	
	b Ophiuchi. $17^{h.}\ 17^{m.}$	c^2 Ophiuchi. $17^{h.}\ 22^{m.}$	o Serpentis. $17^{h.}\ 33^{m.}$	4 Sagittarii. $17^{h.}\ 51^{m.}$	9 Sagittarii. $17^{h.}\ 55^{m.}$	γ Sagittarii. $17^{h.}\ 56^{m.}$	
	s.	s.	s.	s.	s.	s.	
21	37.13	40.46	21.59	2.45	5.08	36.35	+.029
49	37.97	41.30	22.37	3.37	5.92	37.24	.034
76	38.86	42.19	23.21	4.35	6.83	38.19	.036
104	39.77	43.11	24.07	5.36	7.76	39.17	.034
131	40.57	43.90	24.81	6.24	8.57	40.03	.029
158	41.19	44.52	25.40	6.93	9.22	40.70	.020
186	41.56	44.90	25.74	7.34	9.58	41.10	+.008
213	41.59	44.93	25.77	7.37	9.63	41.14	—.005
240	41.34	44.68	25.53	7.09	9.37	40.87	.007
267	40.89	44.23	25.10	6.59	8.91	40.38	.018
294	40.48	43.81	24.70	6.11	8.48	39.93	.015
322	40.27	43.61	24.50	5.88	8.27	39.70	—.002
349	40.44	43.77	24.64	6.03	8.41	39.85	+.010
Dec. =	— 24° 2′	— 23° 51′	— 12° 48′	— 23° 48′	— 24° 22′	— 30° 25′	
Mag. =	5	5	5.4	5	5.4	3.4	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	μ^1 Sagittarii. 18$^{h.}$ 5$^{m.}$	δ Sagittarii. 18$^{h.}$ 11$^{m.}$	λ Sagittarii. 18$^{h.}$ 19$^{m.}$	Bradley 2333. 18$^{h.}$ 29$^{m.}$	φ Sagittarii. 18$^{h.}$ 36$^{m.}$	29 Sagittarii. 18$^{h.}$ 41$^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
22	11.58	49.10	7.51	47.59	42.05	9.58	+.023
49	12.33	49.93	8.30	48.35	42.81	10.29	.030
77	13.26	50.91	9.23	49.25	43.74	11.16	.033
104	14.14	51.85	10.15	50.15	44.67	12.05	.032
132	14.96	52.75	11.02	51.03	45.58	12.92	.029
159	15.58	53.44	11.70	51.72	46.30	13.62	.021
186	15.95	53.85	12.11	52.16	46.77	14.07	+.010
214	16.00	53.92	12.20	52.28	46.91	14.22	—.002
241	15.75	53.70	11.97	52.07	46.70	14.03	.012
268	15.30	53.18	11.51	51.63	46.26	13.61	.016
295	14.88	52.72	11.07	51.18	45.80	13.17	.013
322	14.68	52.48	10.83	50.93	45.52	12.90	—.003
350	14.81	52.61	10.93	50.99	45.58	12.95	+.008
Dec. =	— 21° 6′	— 29° 53′	— 25° 30′	— 23° 37′	— 27° 8′	— 20° 29′	
Mag. =	4	3.4	3	6	4.3	6	
	ν^1 Sagittarii. 18$^{h.}$ 45$^{m.}$	σ Sagittarii. 18$^{h.}$ 46$^{m.}$	ζ Sagittarii. 18$^{h.}$ 53$^{m.}$	τ Sagittarii. 18$^{h.}$ 57$^{m.}$	χ^1Sagittarii. 19$^{h.}$ 16$^{m.}$	h^2 Sagittarii. 19$^{h.}$ 27$^{m.}$	
	s.	s.	s.	s.	s.	s.	
23	30.76	22.55	29.17	59.17	32.67	58.61	+.021
50	31.47	23.24	29.90	59.88	33.31	59.21	.029
78	32.32	24.11	30.80	60.75	34.13	60.01	.033
105	33.25	25.07	31.79	61.71	35.07	60.94	.034
132	34.12	25.96	32.71	62.63	36.00	61.86	.031
160	34.87	26.73	33.53	63.44	36.80	62.72	.024
187	35.33	27.21	34.04	63.96	37.35	63.29	+.012
214	35.47	27.36	34.20	64.12	37.57	63.54	.000
241	35.28	27.17	34.02	63.96	37.45	63.44	—.011
268	34.86	26.73	33.58	63.53	37.05	63.06	.017
296	34.40	26.26	33.09	63.05	36.60	62.58	.014
323	34.14	25.99	32.80	62.75	36.27	62.31	—.005
350	34.18	26.03	32.81	62.77	36.24	62.26	+.005
Dec. =	— 22° 55′	— 26° 28′	— 30° 5′	— 27° 52′	— 24° 47′	— 25° 12′	
Mag. =	5	2.3	3.4	4.3	6	5.4	
	e^2 Sagittarii. 19$^{h.}$ 34$^{m.}$	f Sagittarii. 19$^{h.}$ 37$^{m.}$	b Sagittarii. 19$^{h.}$ 48$^{m.}$	A Sagittarii. 19$^{h.}$ 50$^{m.}$	c Sagittarii. 19$^{h.}$ 53$^{m.}$	Piazzi xix.366. 19$^{h.}$ 55$^{m.}$	
	s.	s.	s.	s.	s.	s.	
23	18.97	59.85	8.72	12.80	50.27	14.08	+.016
51	19.59	60.46	9.33	13.40	50.87	14.70	.025
78	20.34	61.22	10.12	14.17	51.65	15.51	.031
106	21.22	62.11	11.05	15.10	52.58	16.48	.034
133	22.08	63.00	11.99	16.03	53.53	17.47	.032
160	22.86	63.79	12.85	16.88	54.39	18.37	.027
188	23.43	64.42	13.51	17.54	55.07	19.07	.016
215	23.68	64.65	13.81	17.85	55.34	19.35	+.005
242	23.59	64.58	13.75	17.80	55.35	19.37	—.007
269	23.24	64.23	13.45	17.52	55.10	19.08	.017
296	22.81	63.79	12.94	16.99	54.54	18.52	.015
324	22.50	63.45	12.56	16.62	54.15	18.11	—.009
351	22.42	63.37	12.46	16.51	54.04	17.98	.000
Dec. =	— 16° 27′	— 20° 6′	— 27° 33′	— 26° 35′	— 28° 6′	— 32° 27′	
Mag. =	5	5	5	5	5	5	
	α^2 Capricorni. 20$^{h.}$ 10$^{m.}$	π Capricorni. 20$^{h.}$ 19$^{m.}$	ϱ Capricorni. 20$^{h.}$ 20$^{m.}$	ν Capricorni. 20$^{h.}$ 31$^{m.}$	ψ Capricorni. 20$^{h.}$ 37$^{m.}$	ω Capricorni. 20$^{h.}$ 43$^{m.}$	
	s.	s.	s.	s.	s.	s.	
24	5.88	6.73	40.76	53.09	36.13	15.62	+.009
52	6.38	7.22	41.25	53.55	36.60	16.07	.020
79	7.06	7.90	41.92	54.20	37.27	16.73	.027
106	7.87	8.72	42.74	55.00	38.10	17.57	.032
134	8.76	9 65	43.66	55.92	39.07	18.55	.032
161	9.57	10.48	44.50	56.78	39.97	19.46	.027
188	10.18	11.14	45.16	57.45	40.70	20.21	.019
216	10.52	11.51	45.53	57.87	41.13	20.68	+.007
243	10.50	11.52	45.54	57.90	41.19	20.73	—.005
270	10.22	11.25	45.28	57.66	40.96	20.52	.013
297	9.80	10.82	44.85	57.24	40.51	20.07	.015
325	9.45	10.46	44.48	56.87	40.11	19.66	—.010
352	9.32	10.31	44.31	56.70	39.92	19.45	.000
Dec. =	— 12° 59′	— 18° 41′	— 18° 17′	— 18° 38′	— 25° 47′	— 27° 27′	
Mag. =	3.4	5	5	6.5	4.5	4.5	

Sidereal Date.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Name and R.A. of Star.	Daily Change.
	ν Aquarii.	ι Capricorni.	ζ Capricorni.	ε Capricorni.	γ Capricorni.	δ Capricorni.	
	$21^{h.}\ 1^{m.}$	$21^{h.}\ 14^{m.}$	$21^{h.}\ 18^{m.}$	$21^{h.}\ 29^{m.}$	$21^{h.}\ 32^{m.}$	$21^{h.}\ 39^{m.}$	
d.	s.	s.	s.	s.	s.	s.	
25	46.84	15.62	28.69	3.03	8.73	7.51	+.005
52	47.18	15.95	29.01	3.32	9.00	7.78	.015
80	47.77	16.53	29.58	3.85	9.52	8.28	.023
107	48.51	17.26	30.34	4.57	10.23	8.97	.029
135	49.40	18.16	31.27	5.48	11.12	9.84	.032
162	50.25	19.04	32.18	6.38	12.01	10.74	.030
189	50.96	19.79	32.93	7.17	12.79	11.53	.023
217	51.41	20.28	33.49	7.71	13.33	12.08	+.012
244	51.51	20.42	33.64	7.89	13.51	12.28	.000
271	51.30	20.24	33.47	7.74	13.37	12.16	—.009
298	50.94	19.89	33.10	7.40	13.05	11.87	.013
326	50.58	19.51	32.71	7.02	12.67	11.47	.011
353	50.38	19.29	32.47	6.77	12.43	11.23	—.003
Dec. =	— 11° 57′	— 17° 26′	— 23° 2′	— 20° 6′	— 17° 18′	— 16° 46′	
Mag. =	4.5	4.5	4	5.4	4.3	3	
	μ Capricorni.	ι Aquarii.	θ Aquarii.	ϱ Aquarii.	53^2 Aquarii.	σ Aquarii.	
	$21^{h.}\ 45^{m.}$	$21^{h.}\ 58^{m.}$	$22^{h.}\ 9^{m.}$	$22^{h.}\ 12^{m.}$	$22^{h.}\ 18^{m.}$	$22^{h.}\ 23^{m.}$	
	s.	s.	s.	s.	s.	s.	
26	28.71	41.54	16.06	39.35	47.43	3.57	+.008
53	28.94	41.78	16.25	39.50	47.57	3.70	.010
81	29.42	42.18	16.65	39.89	47.96	4.06	.016
108	30.11	42.84	17.28	40.51	48.58	4.66	.026
136	30.98	43.70	18.11	41.34	49.43	5.48	.031
163	31.86	44.59	18.98	42.21	50.33	6.36	.030
190	32.64	45.39	19.78	43.01	51.16	7.18	.025
218	33.19	45.97	20.37	43.61	51.80	7.82	.016
245	33.39	46.23	20.62	43.88	52.09	8.11	+.004
272	33.28	46.13	20.57	43.85	52.09	8.09	—.005
299	31.97	45.84	20.31	43.58	51.81	7.86	.011
327	31.62	45.49	19.97	43.25	51.46	7.52	.011
354	31.37	45.23	19.72	42.98	51.18	7.25	—.005
Dec. =	— 14° 13′	— 14° 34′	— 8° 30′	— 8° 32′	— 17° 28′	— 11° 25′	
Mag. =	5	4	4.5	5.6	6	5.4	
	κ Aquarii.	τ^2 Aquarii.	δ Aquarii.	φ Aquarii.	ψ^1 Aquarii.	ψ^3 Aquarii.	
	$22^{h.}\ 30^{m.}$	$22^{h.}\ 42^{m.}$	$22^{h.}\ 47^{m.}$	$23^{h.}\ 6^{m.}$	$23^{h.}\ 8^{m.}$	$23^{h.}\ 11^{m.}$	
	s.	s.	s.	s.	s.	s.	
27	19.94	0.16	2.49	54.13	22.88	30.42	—.003
54	20.04	0.24	2.56	54.15	22.89	30.42	+.005
82	20.39	0.57	2.89	54.39	23.13	30.66	.013
109	20.97	1.14	3.44	54.89	23.63	31.15	.023
137	21.78	1.95	4.24	55.65	24.39	31.91	.030
164	22.65	2.84	5.14	56.53	25.26	32.77	.031
191	23.46	3.68	5.91	57.36	26.11	33.63	.029
219	24.08	4.34	6.67	58.14	26.81	34.34	.020
246	24.37	4.68	7.03	58.45	27.21	34.75	+.007
273	24.37	4.71	7.07	58.54	27.32	34.85	—.001
300	24.14	4.48	6.86	58.39	27.16	34.71	.008
327	23.83	4.19	6.55	58.12	26.89	34.44	.010
354	23.55	3.89	6.25	57.84	26.60	34.15	—.008
Dec. =	— 4° 58′	— 14° 21′	— 16° 35′	— 6° 49′	— 9° 52′	— 10° 23′	
Mag. =	5	4	3	4.5	5.4	5	
	κ Piscium.	λ Piscium.	20 Piscium.	27 Piscium.	30 Piscium.	33 Piscium.	
	$23^{h.}\ 19^{m.}$	$23^{h.}\ 34^{m.}$	$23^{h.}\ 40^{m.}$	$23^{h.}\ 51^{m.}$	$23^{h.}\ 54^{m.}$	$23^{h.}\ 58^{m.}$	
	s.	s.	s.	s.	s.	s.	
1	35.51	44.44	34.86	20.63	37.14	0.54	—.010
28	35.33	44.23	34.65	20.41	36.92	0.31	—.005
55	35.31	44.18	34.58	20.32	36.82	0.20	+.002
110	36.01	44.79	35.17	20.84	37.33	0.68	.021
138	36.75	45.51	35.87	21.53	38.01	1.37	.028
165	37.61	46.36	36.71	22.36	38.84	2.20	.031
192	38.45	47.21	37.57	23.23	39.71	3.07	.029
220	39.15	47.94	38.33	23.99	40.48	3.84	.022
247	39 55	48.38	38.77	24.47	44.97	4.32	.011
274	39.67	48.54	38.95	24.68	41.19	4.56	+.002
301	39.54	48.45	38.87	24.63	41.16	4.53	—.005
328	39.24	48.22	38.65	24.43	40.96	4.34	.009
356	39.01	47.98	38.37	24.15	40.69	4.07	—.010
Dec. =	+ 0° 28′	+ 1° 0′	— 3° 33′	— 4° 21′	— 6° 49′	— 6° 32′	
Mag. =	5.4	5	6	5.6	5	5	

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	JANUARY.					FEBRUARY.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	′ ″	′ ″	″	h. m.	m.
1.0	16 1.5	58 42.4	+0.74	U. 4 43.0	1.95	16 9.0	59 9.7	—0.53	U. 5 56.3	2.22
1.5	16 3.9	58 50.9	0.67	L. 17 6.4	1.95	16 7.1	59 2.9	0.61	L. 18 23.5	2.30
2.0	16 6.0	58 58.6	0.60	U. 5 29.8	1.96	16 5.0	58 55.1	0.68	U. 6 51.5	2.37
2.5	16 7.9	59 5.4	0.53	L. 17 53.5	1.99	16 2.7	58 46.5	0.75	L. 19 20.5	2.43
3.0	16 9.5	59 11.3	0.45	U. 6 17.5	2.02	16 0.2	58 37.2	0.81	U. 7 50.0	2.48
3.5	16 10.8	59 16.2	0.36	L. 18 42.0	2.07	15 57.4	58 27.1	0.87	L. 20 20.0	2.51
4.0	16 11.8	59 19.9	0.25	U. 7 7.3	2.14	15 54.4	58 16.3	0.93	U. 8 50.3	2.52
4.5	16 12.4	59 22.3	+0.13	L. 19 33.4	2.22	15 51.3	58 4.8	0.99	L. 21 20.6	2.51
5.0	16 12.6	59 23.2	0.00	U. 8 0.5	2.30	15 48.0	57 52.6	1.05	U. 9 50.5	2.47
5.5	16 12.4	59 22.4	—0.14	L. 20 28.7	2.38	15 44.5	57 39.6	1.11	L. 22 19.7	2.40
6.0	16 11.7	59 19.8	0.30	U. 8 57.8	2.46	15 40.8	57 25.9	1.16	U. 10 48.1	2.32
6.5	16 10.5	59 15.3	0.47	L. 21 27.9	2.52	15 36.9	57 11.6	1.21	L. 23 15.4	2.22
7.0	16 8.7	59 8.7	0.64	U. 9 58.6	2.56	15 32.8	56 56.8	1.25	U. 11 41.5	2.13
7.5	16 6.3	59 0.0	0.82	L. 22 29.7	2.59	15 28.6	56 41.5	1.28		
8.0	16 3.4	58 49.1	0.99	U. 11 0.9	2.59	15 24.4	56 25.9	1.30	L. 0 6.5	2.04
8.5	15 59.9	58 36.2	1.15	L. 23 31.7	2.54	15 20.1	56 10.2	1.30	U. 12 30.5	1.96
9.0	15 55.9	58 21.4	1.30			15 15.8	55 54.6	1.29	L. 0 53.4	1.88
9.5	15 51.4	58 4.9	1.44	U. 12 2.0	2.47	15 11.6	55 39.2	1.26	U. 13 15.5	1.82
10.0	15 46.5	57 46.9	1.55	L. 0 30.9	2.38	15 7.6	55 24.3	1.21	L. 1 36.9	1.76
10.5	15 41.3	57 27.7	1.63	U. 12 58.9	2.28	15 3.8	55 10.2	1.13	U. 13 57.6	1.71
11.0	15 35.8	57 7.8	1.68	L. 1 25.7	2.18	15 0.2	54 57.1	1.04	L. 2 17.8	1.67
11.5	15 30.2	56 47.4	1.70	U. 13 51.2	2.08	14 57.0	54 45.2	0.93	U. 14 37.8	1.66
12.0	15 24.6	56 27.0	1.68	L. 2 15.4	1.97	14 54.1	54 34.7	0.80	L. 2 57.6	1.65
12.5	15 19.2	56 7.0	1.63	U. 14 38.6	1.89	14 51.7	54 26.0	0.65	U. 15 17.4	1.65
13.0	15 14.0	55 47.7	1.56	L. 3 0.8	1.82	14 49.9	54 19.1	0.48	L. 3 37.3	1.67
13.5	15 9.1	55 29.5	1.46	U. 15 22.2	1.76	14 48.6	54 14.3	0.30	U. 15 57.4	1.69
14.0	15 4.5	55 12.7	1.33	L. 3 42.9	1.71	14 47.9	54 11.8	—0.11	L. 4 17.9	1.72
14.5	15 0.4	54 57.6	1.18	U. 16 3.1	1.68	14 47.8	54 11.6	+0.09	U. 16 38.9	1.77
15.0	14 56.8	54 44.5	1.00	L. 4 23.0	1.65	14 48.4	54 14.0	0.30	L. 5 0.6	1.83
15.5	14 53.8	54 33.6	0.81	U. 16 42.6	1.63	14 49.7	54 18.9	0.52	U. 17 23.0	1.90
16.0	14 51.5	54 25.0	0.61	L. 5 2.3	1.63	14 51.7	54 26.4	0.73	L. 5 46.2	1.97
16.5	14 49.9	54 18.9	0.40	U. 17 22.0	1.65	14 54.5	54 36.5	0.95	U. 18 10.3	2.04
17.0	14 49.0	54 15.4	—0.18	L. 5 42.0	1.68	14 58.0	54 49.1	1.16	L. 6 35.3	2.12
17.5	14 48.7	54 14.5	+0.04	U. 18 2.4	1.72	15 2.2	55 4.3	1.36	U. 19 1.2	2.19
18.0	14 49.1	54 16.3	0.26	L. 6 23.3	1.77	15 6.9	55 21.7	1.54	L. 7 28.0	2.26
18.5	14 50.3	54 20.7	0.48	U. 18 44.9	1.83	15 12.2	55 41.3	1.71	U. 19 55.4	2.31
19.0	14 52.2	54 27.7	0.69	L. 7 7.3	1.91	15 18.1	56 2.8	1.86	L. 8 23.4	2.34
19.5	14 54.8	54 37.2	0.89	U. 19 30.6	1.99	15 24.4	56 25.9	1.98	U. 20 51.7	2.36
20.0	14 58.0	54 49.0	1.07	L. 7 54.9	2.07	15 31.0	56 50.3	2.07	L. 9 20.2	2.36
20.5	15 1.8	55 2.9	1.24	U. 20 20.2	2.14	15 37.8	57 15.5	2.11	U. 21 48.5	2.35
21.0	15 6.1	55 18.8	1.39	L. 8 46.4	2.21	15 44.8	57 41.0	2.11	L. 10 16.5	2.32
21.5	15 10.9	55 36.3	1.52	U. 21 13.5	2.28	15 51.7	58 6.2	2.07	U. 22 44.1	2.28
22.0	15 16.0	55 55.2	1.62	L. 9 41.3	2.34	15 58.3	58 30.6	1.98	L. 11 11.1	2.23
22.5	15 21.4	56 15.1	1.68	U. 22 9.7	2.37	16 4.6	58 53.7	1.85	U. 23 37.6	2.18
23.0	15 27.0	56 35.6	1.72	L. 10 38.4	2.39	16 10.4	59 14.9	1.67		
23.5	15 32.7	56 56.4	1.73	U. 23 7.1	2.38	16 15.5	59 33.7	1.45	L. 12 3.5	2.14
24.0	15 38.3	57 17.1	1.70	L. 11 35.6	2.36	16 19.9	59 49.7	1.19	U. 0 29.0	2.10
24.5	15 43.8	57 37.2	1.63			16 23.4	60 2.4	0.91	L. 12 54.0	2.08
25.0	15 49.0	57 56.3	1.54	U. 0 3.7	2.32	16 25.9	60 11.6	0.62	U. 1 18.8	2.06
25.5	15 53.9	58 14.1	1.42	L. 12 31.3	2.27	16 27.4	60 17.3	0.32	L. 13 43.6	2.06
26.0	15 58.3	58 30.4	1.28	U. 0 58.2	2.21	16 27.9	60 19.4	+0.03	U. 2 8.3	2.07
26.5	16 2.2	58 44.8	1.11	L. 13 24.3	2.15	16 27.5	60 18.0	—0.25	L. 14 33.3	2.10
27.0	16 5.5	58 57.1	0.93	U. 1 49.8	2.10	16 26.3	60 13.3	0.51	U. 2 58.7	2.14
27.5	16 8.2	59 7.2	0.75	L. 14 14.7	2.06	16 24.3	60 5.7	0.74	L. 15 24.6	2.18
28.0	16 10.4	59 15.1	0.57	U. 2 39.2	2.02	16 21.5	59 55.5	0.94	U. 3 51.1	2.24
28.5	16 12.0	59 20.8	0.39	L. 15 3.3	2.00	16 18.1	59 43.1	1.11	L. 16 18.4	2.31
29.0	16 13.0	59 24.4	0.22	U. 3 27.2	2.00	16 14.2	59 28.9	1.24	U. 4 46.5	2.37
29.5	16 13.4	59 26.0	+0.06	L. 15 51.1	2.00	16 10.0	59 13.4	1.33	L. 17 15.3	2.42
30.0	16 13.3	59 25.8	—0.09	U. 4 15.2	2.02	16 5.5	58 56.9	1.40	U. 5 44.7	2.47
30.5	16 12.8	59 23.9	0.22	L. 16 39.6	2.05	16 0.9	58 39.8	1.44	L. 18 14.6	2.50
31.0	16 11.9	59 20.4	0.34	U. 5 4.6	2.10	15 56.2	58 22.4	1.45	U. 6 44.8	2.51
31.5	16 10.6	59 15.6	—0.44	L. 17 30.0	2.16	15 51.4	58 4.9	—1.45	L. 19 15.0	2.50

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	MARCH.					APRIL.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	′ ″	′ ″	″	h. m.	m.
1.0	16 14.2	59 28.9	—1.24	U. 4 46.5	2.36	15 45.8	57 44.6	—1.95	U. 6 37.8	2.40
1.5	16 10.0	59 13.4	1.33	L. 17 15.3	2.42	15 39.5	57 21.5	1.88	L. 19 6.0	2.31
2.0	16 5.5	58 56.9	1.40	U. 5 44.7	2.47	15 33.5	56 59.3	1.80	U. 7 33.1	2.21
2.5	16 0.9	58 39.8	1.44	L. 18 14.6	2.50	15 27.8	56 38.3	1.70	L. 19 59.0	2.11
3.0	15 56.2	58 22.4	1.45	U. 6 44.8	2.52	15 22.4	56 18.5	1.58	U. 8 23.8	2.02
3.5	15 51.4	58 4.9	1.45	L. 19 15.0	2.50	15 17.3	56 0.0	1.46	L. 20 47.4	1.93
4.0	15 46.6	57 47.5	1.44	U. 7 44.8	2.47	15 12.6	55 42.9	1.35	U. 9 10.1	1.85
4.5	15 41.9	57 30.3	1.42	L. 20 14.1	2.41	15 8.3	55 27.2	1.25	L. 21 31.9	1.79
5.0	15 37.3	57 13.5	1.38	U. 8 42.5	2.33	15 4.4	55 12.8	1.14	U. 9 53.0	1.74
5.5	15 32.9	56 57.2	1.34	L. 21 10.0	2.24	15 0.9	54 59.8	1.03	L. 22 13.6	1.70
6.0	15 28.6	56 41.4	1.30	U. 9 36.3	2.15	14 57.8	54 48.2	0.92	U. 10 33.7	1.67
6.5	15 24.4	56 26.0	1.26	L. 22 1.6	2.06	14 55.0	54 37.8	0.81	L. 22 53.5	1.64
7.0	15 20.3	56 11.1	1.22	U. 10 25.9	1.98	14 52.5	54 28.7	0.71	U. 11 13.1	1.63
7.5	15 16.4	55 56.7	1.18	L. 22 49.1	1.90	14 50.3	54 20.8	0.61	L. 23 32.8	1.64
8.0	15 12.6	55 42.9	1.13	U. 11 11.5	1.83	14 48.5	54 14.1	0.51	U. 11 52.5	1.65
8.5	15 9.0	55 29.7	1.08	L. 23 33.1	1.77	14 47.0	54 8.6	0.41		
9.0	15 5.6	55 17.1	1.03	U. 11 54.0	1.72	14 45.8	54 4.3	0.31	L. 0 12.5	1.68
9.5	15 2.4	55 5.1	0.97			14 45.0	54 1.2	0.20	U. 12 32.9	1.72
10.0	14 59.4	54 53.9	0.90	L. 0 14.5	1.69	14 44.5	53 59.4	—0.09	L. 0 53.7	1.76
10.5	14 56.6	54 43.5	0.83	U. 12 34.6	1.67	14 44.4	53 59.0	+0.03	U. 13 15.1	1.81
11.0	14 54.0	54 34.1	0.74	L. 0 54.4	1.65	14 44.7	54 0.1	0.15	L. 1 37.1	1.86
11.5	14 51.7	54 25.7	0.65	U. 13 14.2	1.65	14 45.4	54 2.7	0.29	U. 13 59.8	1.92
12.0	14 49.7	54 18.4	0.55	L. 1 34.0	1.66	14 46.6	54 7.0	0.43	L. 2 23.3	1.98
12.5	14 48.1	54 12.5	0.43	U. 13 54.0	1.67	14 48.2	54 13.1	0.58	U. 14 47.5	2.05
13.0	14 46.9	54 8.1	0.30	L. 2 14.2	1.70	14 50.3	54 21.0	0.74	L. 3 12.5	2.11
13.5	14 46.1	54 5.4	—0.15	U. 14 34.9	1.74	14 53.0	54 30.8	0.90	U. 15 38.2	2.16
14.0	14 45.8	54 4.5	0.00	L. 2 56.1	1.79	14 56.3	54 42.7	1.07	L. 4 4.4	2.20
14.5	14 46.1	54 5.5	+0.17	U. 15 17.9	1.84	15 0.1	54 56.7	1.25	U. 16 31.1	2.23
15.0	14 47.0	54 8.6	0.35	L. 3 40.3	1.90	15 4.5	55 12.7	1.43	L. 4 58.0	2.24
15.5	14 48.5	54 14.0	0.55	U. 16 3.5	1.97	15 9.5	55 30.9	1.60	U. 17 25.0	2.25
16.0	14 50.6	54 21.7	0.74	L. 4 27.6	2.04	15 15.0	55 51.1	1.77	L. 5 52.0	2.24
16.5	14 53.3	54 31.7	0.93	U. 16 52.5	2.11	15 21.0	56 13.3	1.93	U. 18 18.7	2.22
17.0	14 56.7	54 44.1	1.13	L. 5 18.2	2.17	15 27.5	56 37.4	2.08	L. 6 45.1	2.19
17.5	15 0.7	54 58.9	1.33	U. 17 44.5	2.22	15 34.5	57 3.1	2.20	U. 19 11.1	2.15
18.0	15 5.4	55 16.1	1.53	L. 6 11.5	2.26	15 41.9	57 30.2	2.30	L. 7 36.7	2.12
18.5	15 10.8	55 35.7	1.73	U. 18 38.9	2.29	15 49.6	57 58.3	2.37	U. 20 2.0	2.09
19.0	15 16.8	55 57.6	1.91	L. 7 6.5	2.30	15 57.4	58 27.0	2.39	L. 8 26.9	2.07
19.5	15 23.3	56 21.5	2.06	U. 19 34.2	2.30	16 5.2	58 55.7	2.36	U. 20 51.5	2.05
20.0	15 30.2	56 47.1	2.19	L. 8 1.8	2.29	16 12.8	59 23.7	2.27	L. 9 16.0	2.04
20.5	15 37.5	57 14.1	2.29	U. 20 29.1	2.26	16 20.0	59 50.3	2.12	U. 21 40.5	2.05
21.0	15 45.1	57 42.0	2.35	L. 8 56.0	2.23	16 26.6	60 14.8	1.92	L. 10 5.3	2.08
21.5	15 52.9	58 10.4	2.37	U. 21 22.6	2.20	16 32.5	60 36.5	1.66	U. 22 30.4	2.12
22.0	16 0.6	58 38.8	2.33	L. 9 48.7	2.16	16 37.5	60 54.7	1.35	L. 10 56.0	2.17
22.5	16 8.1	59 6.5	2.23	U. 22 14.4	2.13	16 41.4	61 8.8	0.99	U. 23 22.4	2.23
23.0	16 15.2	59 32.6	2.08	L. 10 39.8	2.11	16 44.0	61 18.4	0.60	L. 11 49.6	2.30
23.5	16 21.7	59 56.5	1.87	U. 23 4.9	2.09	16 45.3	61 23.1	+0.18		
24.0	16 27.5	60 17.6	1.61	L. 11 29.9	2.08	16 45.2	61 22.7	—0.24	U. 0 17.7	2.39
24.5	16 32.3	60 35.4	1.31	U. 23 55.0	2.10	16 43.7	61 17.3	0.65	L. 12 46.9	2.48
25.0	16 36.0	60 49.2	0.97			16 40.9	61 7.0	1.04	U. 1 17.2	2.56
25.5	16 38.6	60 58.7	0.60	L. 12 20.4	2.12	16 36.9	60 52.3	1.39	L. 13 48.3	2.62
26.0	16 40.0	61 3.6	+0.21	U. 0 46.1	2.16	16 31.9	60 33.8	1.68	U. 2 20.1	2.67
26.5	16 40.1	61 3.9	—0.17	L. 13 12.3	2.21	16 26.0	60 12.0	1.92	L. 14 52.4	2.69
27.0	16 38.9	60 59.6	0.53	U. 1 39.2	2.28	16 19.4	59 47.6	2.11	U. 3 24.6	2.67
27.5	16 36.6	60 51.1	0.87	L. 14 6.9	2.34	16 12.2	59 21.3	2.24	L. 15 56.5	2.62
28.0	16 33.2	60 38.6	1.18	U. 2 35.4	2.41	16 4.7	58 53.8	2.31	U. 4 27.6	2.55
28.5	16 28.9	60 22.7	1.44	L. 15 4.7	2.47	15 57.0	58 25.8	2.33	L. 16 57.6	2.45
29.0	16 23.8	60 4.0	1.65	U. 3 34.8	2.53	15 49.4	57 57.9	2.30	U. 5 26.4	2.34
29.5	16 18.1	59 43.1	1.81	L. 16 5.5	2.57	15 42.0	57 30.5	2.25	L. 17 53.8	2.22
30.0	16 11.9	59 20.5	1.93	U. 4 36.5	2.58	15 34.8	57 4.1	2.15	U. 6 19.8	2.12
30.5	16 5.5	58 56.8	2.00	L. 17 7.5	2.57	15 28.0	56 39.0	2.02	L. 18 44.6	2.04
31.0	15 58.9	58 32.6	2.02	U. 5 38.3	2.54	15 21.7	56 15.6	1.86	U. 7 8.4	1.99
31.5	15 52.3	58 8.4	—2.00	L. 18 8.5	2.48	15 16.0	55 54.1	—1.66	L. 19 31.5	1.97

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	MAY.					JUNE.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	′ ″	′ ″	″	h. m.	m.
1.0	15 21.6	56 15.5	—1.89	U. 7 8.1	1.91	14 53.5	54 32.4	—0.96	U. 7 51.4	1.64
1.5	15 15.7	55 53.8	1.74	L. 19 30.6	1.84	14 50.7	54 22.0	0.77	L. 20 11.1	1.65
2.0	15 10.2	55 33.9	1.58	U. 7 52.3	1.78	14 48.5	54 13.9	0.58	U. 8 31.0	1.67
2.5	15 5.3	55 16.0	1.41	L. 20 13.2	1.72	14 46.9	54 8.0	0.40	L. 20 51.2	1.70
3.0	15 1.0	55 0.0	1.25	U. 8 33.5	1.67	14 45.8	54 4.2	0.24	U. 9 11.8	1.74
3.5	14 57.2	54 46.0	1.08	L. 20 53.5	1.65	14 45.3	54 2.3	—0.08	L. 21 33.0	1.79
4.0	14 53.9	54 34.0	0.98	U. 9 13.1	1.63	14 45.3	54 2.2	+0.07	U. 9 54.9	1.85
4.5	14 51.1	54 23.8	0.77	L. 21 32.6	1.63	14 45.7	54 3.9	0.21	L. 22 17.5	1.91
5.0	14 48.9	54 15.5	0.62	U. 9 52.2	1.64	14 46.6	54 7.3	0.34	U. 10 40.8	1.98
5.5	14 47.1	54 9.0	0.48	L. 22 12.0	1.66	14 48.0	54 12.1	0.46	L. 23 5.0	2.05
6.0	14 45.8	54 4.0	0.35	U. 10 32.1	1.69	14 49.7	54 18.3	0.56	U. 11 30.1	2.12
6.5	14 44.8	54 0.6	0.22	L. 22 52.5	1.73	14 51.6	54 25.6	0.65	L. 23 55.8	2.17
7.0	14 44.3	53 58.6	—0.10	U. 11 13.5	1.78	14 53.9	54 34.0	0.74	U. 12 22.0	2.21
7.5	14 44.2	53 58.1	+0.01	L. 23 35.1	1.83	14 56.5	54 43.4	0.83		
8.0	14 44.4	53 58.9	0.12	U. 11 57.4	1.89	14 59.3	54 53.8	0.91	L. 0 48.7	2.24
8.5	14 44.9	54 1.0	0.23			15 2.4	55 5.2	0.99	U. 13 15.7	2.25
9.0	14 45.8	54 4.3	0.34	L. 0 20.5	1.96	15 5.8	55 17.6	1.07	L. 1 42.7	2.24
9.5	14 47.1	54 9.0	0.45	U. 12 44.3	2.02	15 9.4	55 30.9	1.14	U. 14 9.5	2.22
10.0	14 48.7	54 15.0	0.56	L. 1 8.9	2.08	15 13.2	55 45.0	1.21	L. 2 36.0	2.19
10.5	14 50.7	54 22.4	0.67	U. 13 34.2	2.13	15 17.3	56 0.0	1.28	U. 15 2.0	2.15
11.0	14 53.1	54 31.1	0.78	L. 2 0.1	2.18	15 21.6	56 15.8	1.35	L. 3 27.5	2.10
11.5	14 55.9	54 41.2	0.90	U. 14 26.5	2.22	15 26.2	56 32.5	1.42	U. 15 52.4	2.05
12.0	14 59.0	54 52.8	1.03	L. 2 53.2	2.23	15 31.0	56 50.0	1.49	L. 4 16.7	2.00
12.5	15 2.6	55 5.9	1.16	U. 15 20.0	2.23	15 35.9	57 8.2	1.55	U. 16 40.5	1.97
13.0	15 6.6	55 20.6	1.29	L. 3 46.8	2.22	15 41.0	57 27.1	1.60	L. 5 3.9	1.94
13.5	15 11.0	55 36.9	1.42	U. 16 13.3	2.20	15 46.3	57 46.5	1.63	U. 17 27.1	1.92
14.0	15 15.9	55 54.8	1.55	L. 4 39.5	2.17	15 51.7	58 6.3	1.66	L. 5 50.1	1.92
14.5	15 21.2	56 14.3	1.68	U. 17 5.2	2.13	15 57.2	58 26.4	1.67	U. 18 13.1	1.93
15.0	15 26.9	56 35.2	1.80	L. 5 30.4	2.08	16 2.6	58 46.3	1.64	L. 6 36.4	1.95
15.5	15 33.0	56 57.6	1.91	U. 17 55.2	2.05	16 7.9	59 5.8	1.60	U. 19 0.0	1.99
16.0	15 39.4	57 21.2	2.01	L. 6 19.6	2.02	16 13.0	59 24.6	1.52	L. 7 24.2	2.05
16.5	15 46.1	57 45.8	2.08	U. 18 43.6	1.99	16 17.8	59 42.2	1.39	U. 19 49.2	2.12
17.0	15 53.0	58 11.1	2.13	L. 7 7.3	1.97	16 22.1	59 58.0	1.23	L. 8 15.1	2.20
17.5	16 0.0	58 36.8	2.15	U. 19 30.9	1.97	16 25.9	60 11.7	1.03	U. 20 42.1	2.30
18.0	16 7.0	59 2.5	2.12	L. 7 54.6	1.98	16 28.9	60 22.8	0.80	L. 9 10.4	2.41
18.5	16 13.8	59 27.5	2.03	U. 20 18.5	2.01	16 31.1	60 30.8	0.52	U. 21 40.0	2.52
19.0	16 20.3	59 51.2	1.91	L. 8 42.8	2.05	16 32.3	60 35.4	+0.23	L. 10 10.8	2.61
19.5	16 26.3	60 13.1	1.73	U. 21 7.7	2.11	16 32.6	60 36.3	—0.08	U. 22 42.6	2.68
20.0	16 31.5	60 32.4	1.48	L. 9 33.5	2.18	16 31.8	60 33.4	0.41	L. 11 15.2	2.73
20.5	16 35.9	60 48.5	1.19	U. 22 0.2	2.27	16 29.9	60 26.4	0.75	U. 23 48.1	2.74
21.0	16 39.2	61 0.8	0.86	L. 10 28.0	2.37	16 26.9	60 15.5	1.06	L. 12 20.9	2.72
21.5	16 41.4	61 8.9	0.49	U. 22 57.0	2.47	16 23.0	60 1.1	1.34		
22.0	16 42.4	61 12.5	+0.10	L. 11 27.3	2.57	16 18.2	59 43.5	1.59	U. 0 53.2	2.65
22 5	16 42.1	61 11.3	—0.30	U. 23 58.6	2.65	16 12.6	59 22.9	1.81	L. 13 24.5	2.56
23.0	16 40.5	61 5.3	0.69	L. 12 30.8	2.72	16 6.4	59 0.0	1.98	U. 1 54.5	2.44
23.5	16 37.6	60 54.7	1.06			15 59.7	58 35.4	2.09	L. 14 23.1	2.32
24.0	16 33.5	60 39.9	1.41	U. 1 3.7	2.76	15 52.7	58 9.8	2.16	U. 2 50.3	2.21
24.5	16 28.4	60 21.1	1.72	L. 13 36.8	2.75	15 45.6	57 43.6	2.19	L. 15 16.1	2.09
25.0	16 22.5	59 58.9	1.97	U. 2 9.5	2.70	15 38.4	57 17.2	2.18	U. 3 40.5	1.98
25.5	16 15.8	59 34.2	2.14	L. 14 41.5	2.62	15 31.3	56 51.3	2.12	L. 16 3.7	1.89
26.0	16 8.5	59 7.6	2.28	U. 3 12.4	2.52	15 24.5	56 26.4	2.01	U. 4 26.0	1.82
26.5	16 0.8	58·39.7	2.36	L. 15 42.0	2.41	15 18.2	56 3.0	1.88	L. 16 47.4	1.75
27.0	15 53.0	58 11.2	2.38	U. 4 10.1	2.28	15 12.3	55 41.3	1.72	U. 5 8.1	1.71
27.5	15 45.3	57 42.7	2.36	L. 16 36.7	2.16	15 6.9	55 21.6	1.55	L. 17 28.5	1.68
28.0	15 37.7	57 14.7	2.29	U. 5 1.9	2.05	15 2.1	55 4.1	1.36	U. 5 48.5	1.66
28.5	15 30.4	56 47.8	2.18	L. 17 25.9	1.95	14 58.0	54 48.9	1.16	L. 18 8.4	1.66
29.0	15 23.4	56 22.4	2.04	U. 5 48.7	1.86	14 54.5	54 36.1	0.96	U. 6 28.3	1.67
29.5	15 17.0	55 58.8	1.89	L. 18 10.5	1.78	14 51.7	54 25.8	0.75	L. 18 48.4	1.68
30.0	15 11.1	55 37.1	1.72	U. 6 31.6	1.72	14 49.6	54 18.0	0.54	U. 7 8.8	1.72
30.5	15 5.8	55 17.5	1.54	L. 18 52.0	1.68	14 48.2	54 12.8	0.33	L. 19 29.7	1.77
31.0	15 1.1	55 0.2	1.35	U. 7 12.0	1.66	14 47.4	54 10.1	—0.12	U. 7 51.1	1.81
31.5	14 57.0	54 45.1	—1.16	L. 19 31.8	1.64	14 47.4	54 10.0	+0.10	L. 20 13 2	1.88

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JULY.					AUGUST.				
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	′ ″	′ ″	″	h. m.	m.
1.0	14 47.5	54 10.0	−0.12	U. 7 51.1	1.81	14 59.7	54 54.9	+1.08	U. 8 59.6	2.24
1.5	14 47.4	54 9.4	+0.06	L. 20 13.2	1.88	15 3.5	55 8.7	1.21	L. 21 26.7	2.27
2.0	14 47.8	54 11.1	0.23	U. 8 36.1	1.93	15 7.6	55 24.0	1.32	U. 9 54.0	2.28
2.5	14 48.8	54 14.8	0.39	L. 20 59.7	2.01	15 12.1	55 40.4	1.41	L. 22 21.4	2.27
3.0	14 50.4	54 20.7	0.55	U. 9 24.2	2.08	15 16.8	55 57.8	1.48	U. 10 48.6	2.25
3.5	14 52.5	54 28.3	0.69	L. 21 49.5	2.13	15 21.8	56 15.7	1.51	L. 23 15.4	2.21
4.0	14 55.0	54 37.4	0.81	U. 10 15.5	2.19	15 26.8	56 34.0	1.52	U. 11 41.7	2.18
4.5	14 57.8	54 47.9	0.92	L. 22 42.1	2.23	15 31.7	56 52.3	1.50		
5.0	15 0.9	54 59.6	1.01	U. 11 9.1	2.27	15 36.1	57 10.2	1.46	L. 0 7.6	2.13
5.5	15 4.3	55 12.3	1.08	L. 23 36.4	2.27	15 41.2	57 27.5	1.40	U. 12 32.8	2.08
6.0	15 8.0	55 25.9	1.14	U. 12 3.6	2.27	15 45.6	57 44.0	1.33	L. 0 57.4	2.03
6.5	15 11.9	55 39.7	1.19			15 49.6	57 59.5	1.24	U. 13 21.6	2.00
7.0	15 15.8	55 54.2	1.21	L. 0 30.7	2.23	15 53.5	58 13.6	1.13	L. 1 45.3	1.97
7.5	15 19.8	56 9.1	1.23	U. 12 57.3	2.20	15 57.1	58 26.4	1.01	U. 14 8.8	1.95
8.0	15 23.9	56 24.1	1.25	L. 1 23.5	2.16	16 0.3	58 37.9	0.89	L. 2 32.1	1.94
8.5	15 28.0	56 39.2	1.26	U. 13 49.1	2.10	16 3.0	58 47.9	0.77	U. 14 55.4	1.95
9.0	15 32.1	56 54.4	1.25	L. 2 14.0	2.04	16 5.3	58 56.4	0.65	L. 3 18.8	1.97
9.5	15 36.2	57 9.4	1.24	U. 14 38.3	1.99	16 7.2	59 3.5	0.53	U. 15 42.7	2.01
10.0	15 40.3	57 24.2	1.23	L. 3 2.2	1.95	16 8.7	59 9.1	0.41	L. 4 7.0	2.06
10.5	15 44.3	57 38.9	1.21	U. 15 25.6	1.93	16 9.9	59 13.3	0.29	U. 16 32.0	2.12
11.0	15 48.2	57 53.2	1.19	L. 3 48.6	1.92	16 10.6	59 16.1	0.18	L. 4 57.9	2.19
11.5	15 52.0	58 7.2	1.16	U. 16 11.5	1.92	16 11.1	59 17.6	+0.08	U. 17 24.7	2.27
12.0	15 55.8	58 20.8	1.12	L. 4 34.4	1.93	16 11.2	59 18.0	−0.02	L. 5 52.5	2.36
12.5	15 59.3	58 34.0	1.08	U. 16 57.4	1.95	16 10.9	59 17.2	0.12	U. 18 21.3	2.44
13.0	16 2.8	58 46.8	1.04	L. 5 20.9	1.98	16 10.4	59 15.2	0.22	L. 6 51.1	2.51
13.5	16 6.1	58 58.9	0.97	U. 17 44.8	2.03	16 9.6	59 11.9	0.32	U. 19 21.7	2.57
14.0	16 9.2	59 10.1	0.88	L. 6 9.5	2.10	16 8.3	59 7.2	0.43	L. 7 52.8	2.60
14.5	16 11.9	59 20.2	0.78	U. 18 35.0	2.18	16 6.6	59 1.2	0.55	U. 20 24.2	2.61
15.0	16 14.3	59 29.2	0.67	L. 7 1.6	2.27	16 4.5	58 53.8	0.67	L. 8 55.4	2.58
15.5	16 16.5	59 36.8	0.54	U. 19 29.4	2.36	16 2.2	58 45.0	0.79	U. 21 26.1	2.54
16.0	16 17.8	59 42.7	0.39	L. 7 58.3	2.45	15 59.4	58 34.8	0.91	L. 9 56.0	2.45
16.5	16 18.9	59 46.5	0.22	U. 20 28.3	2.54	15 56 2	58 23.2	1.03	U. 22 24.9	2.36
17.0	16 19.3	59 48.1	+0.03	L. 8 59.4	2.61	15 52.7	58 10.2	1.14	L. 10 52.6	2.26
17.5	16 19.2	59 47.3	−0.18	U. 21 31.2	2.66	15 48.9	57 55.9	1.24	U. 23 19.1	2.17
18.0	16 18.2	59 43.9	0.41	L. 10 3.3	2.68	15 44.6	57 40.4	1.33	L. 11 44.5	2.07
18.5	16 16.5	59 37.7	0.64	U. 22 35.5	2.66	15 40.1	57 24.0	1.40		
19.0	16 14.0	59 28.7	0.86	L. 11 7.2	2.61	15 35.4	57 6.8	1.46	U. 0 8.7	1.98
19.5	16 10.9	59 17.0	1.07	U. 23 38.0	2.53	15 30.6	56 49.1	1.49	L. 12 31.9	1.90
20.0	16 7.1	59 3.0	1.27	L. 12 7.8	2.43	15 25.7	56 31.0	1.50	U. 0 54.4	1.83
20.5	16 2.6	58 46.7	1.45			15 20.8	56 12.9	1.49	L. 13 16.0	1.78
21.0	15 57.6	58 28.4	1.60	U. 0 36.3	2.32	15 16.1	55 55.1	1.46	U. 1 37.1	1.74
21.5	15 52.1	58 8.4	1.72	L. 13 3.4	2.20	15 11.4	55 37.8	1.41	L. 13 57.9	1.72
22.0	15 46.4	57 47.1	1.80	U. 1 29.3	2.09	15 7.0	55 21.5	1.32	U. 2 18.4	1.70
22.5	15 40.4	57 25.0	1.85	L. 13 53.8	1.99	15 2.8	55 6.3	1.21	L. 14 38.7	1.70
23.0	15 34.3	57 2.4	1.86	U. 2 17.3	1.91	14 59.1	54 52.6	1.08	U. 2 59.1	1.71
23.5	15 28.2	56 40.0	1.84	L. 14 39.8	1.84	14 55.8	54 40.6	0.93	L. 15 19.7	1.73
24.0	15 22.2	56 18.1	1.79	U. 3 1.5	1.78	14 53.1	54 30.5	0.75	U. 3 40.6	1.76
24.5	15 16.6	55 57.1	1.69	L. 15 22.6	1.74	14 51.0	54 22.7	0.55	L. 16 1.9	1.80
25.0	15 11.3	55 37.4	1.56	U. 3 43.2	1.71	14 49.6	54 17.3	0.35	U. 4 23.7	1.84
25.5	15 6.4	55 19.3	1.42	L. 16 3.6	1.69	14 48.7	54 14.2	−0.15	L. 16 46.2	1.89
26.0	15 2.0	55 3.1	1.26	U. 4 23.7	1.68	14 48.5	54 13.6	+0.06	U. 5 9.4	1.95
26.5	14 58.1	54 49.0	1.08	L. 16 43.9	1.69	14 49.0	54 15.5	0.28	L. 17 33.3	2.01
27.0	14 54.9	54 37.2	0.89	U. 5 4.3	1.71	14 50.2	54 20.0	0.49	U. 5 57.9	2.08
27.5	14 52.3	54 27.7	0.69	L. 17 25.0	1.74	14 52.2	54 27.0	0.69	L. 18 23.2	2.14
28.0	14 50.5	54 20.7	0.48	U. 5 46.1	1.78	14 54.8	54 36.6	0.89	U. 6 49.1	2.19
28.5	14 49.3	54 16.3	0.26	L. 18 7.7	1.83	14 58.2	54 48.7	1.08	L. 19 15.6	2.23
29.0	14 48.8	54 14.6	−0.04	U. 6 30.0	1.88	15 2.1	55 3.2	1.26	U. 7 42.5	2.25
29.5	14 49.0	54 15.4	+0.18	L. 18 53.0	1.94	15 6.7	55 19.7	1.44	L. 20 9.6	2.26
30.0	14 49.9	54 18.7	0.39	U. 7 16.9	2.00	15 11.7	55 38.2	1.60	U. 8 36.7	2.25
30.5	14 51.5	54 24.4	0.58	L. 19 41.4	2.07	15 17.0	55 58.3	1.72	L. 21 3.7	2.23
31.0	14 53.7	54 32.5	0.76	U. 8 6.8	2.14	15 22.8	56 19.7	1.80	U. 9 30.3	2.20
31.5	14 56.4	54 42.8	+0.93	L. 20 32.9	2.20	15 28.8	56 42.0	+1.86	L. 21 56.5	2.17

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	SEPTEMBER.					OCTOBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	″	′ ″	″	h. m.	m.
1.0	15 34.9	57 4.8	+1.90	U. 10 22.3	2.14	16 7.1	59 2.7	+2.04	U. 10 37.5	2.01
1.5	15 41.0	57 27.7	1.88	L. 22 47.6	2.09	16 13.6	59 26.4	1.88	L. 23 1.6	2.03
2.0	15 47.1	57 50.2	1.83	U. 11 12.6	2.06	16 19.4	59 47.7	1.65	U. 11 26.0	2.05
2.5	15 53.0	58 11.9	1.75	L. 23 37.1	2.04	16 24.3	60 6.1	1.40	L. 23 50.8	2.09
3.0	15 58.6	58 32.2	1.62	U. 12 1.3	2.02	16 28.4	60 21.2	1.11	U. 12 16.2	2.15
3.5	16 3.8	58 50.8	1.47			16 31.4	60 32.5	0.79		
4.0	16 8.4	59 7.3	1.28	L. 0 25.2	2.01	16 33.4	60 39.8	0.45	L. 0 42.3	2.22
4.5	16 12.2	59 21.4	1.07	U. 12 49.2	2.00	16 34.2	60 42.8	+0.10	U. 13 9.3	2.29
5.0	16 15.3	59 32.9	1.83	L. 1 13.2	2.02	16 33.9	60 41.8	—0.23	L. 1 37.2	2.36
5.5	16 17.6	59 41.7	1.61	U. 13 37.5	2.04	16 32.6	60 37.1	0.54	U. 14 6.0	2.44
6.0	16 19.1	59 47.6	1.36	L. 2 2.2	2.08	16 30.3	60 28.7	0.83	L. 2 35.8	2.52
6.5	16 20.1	59 50.6	+0.15	U. 14 27.3	2.13	16 27.2	60 17.0	1.08	U. 15 6.6	2.58
7.0	16 20.3	59 50.9	—0.06	L. 2 53.3	2.20	16 23.3	60 2.6	1.28	L. 3 38.0	2.62
7.5	16 19.7	59 48.8	0.27	U. 15 20.1	2.27	16 18.8	59 45.9	1.45	U. 16 9.8	2.63
8.0	16 18.5	59 44.5	0.45	L. 3 47.8	2.34	16 13.8	59 27.4	1.58	L. 4 41.4	2.62
8.5	16 16.7	59 38.1	0.60	U. 16 16.3	2.42	16 8.5	59 7.7	1.68	U. 17 12.8	2.58
9.0	16 14.5	59 29.8	0.74	L. 4 45.7	2.48	16 2.9	58 47.4	1.71	L. 5 43.7	2.51
9.5	16 11.8	59 20.1	0.85	U. 17 15.9	2.54	15 57.3	58 26.9	1.73	U. 18 13.7	2.43
10.0	16 8.9	59 9.3	0.94	L. 5 46.6	2.57	15 51.7	58 6.2	1.72	L. 6 42.5	2.34
10.5	16 5.7	58 57.5	1.01	U. 18 17.6	2.57	15 46.1	57 45.5	1.68	U. 19 9.9	2.24
11.0	16 2.2	58 44.9	1.07	L. 6 48.7	2.55	15 40.6	57 25.3	1.63	L. 7 36.1	2.14
11.5	15 58.6	58 31.7	1.11	U. 19 19.4	2.51	15 35.4	57 6.0	1.58	U. 20 0.9	2.04
12.0	15 54.9	58 18.1	1.14	L. 7 49.2	2.45	15 30.4	56 47.5	1.51	L. 8 24.6	1.96
12.5	15 51.1	58 4.2	1.17	U. 20 18.2	2.36	15 25.6	56 29.8	1.44	U. 20 47.5	1.88
13.0	15 47.2	57 49.9	1.20	L. 8 46.2	2.27	15 21.0	56 12.9	1.37	L. 9 9.6	1.82
13.5	15 43.3	57 35.4	1.21	U. 21 13.0	2.18	15 16.6	55 56.9	1.29	U. 21 30.9	1.77
14.0	15 39.3	57 20.7	1.22	L. 9 38.7	2.09	15 12.5	55 41.9	1.22	L. 9 51.8	1.73
14.5	15 35.2	57 5.8	1.24	U. 22 3.3	2.01	15 8.6	55 27.8	1.14	U. 22 12.2	1.70
15.0	15 31.1	56 50.8	1.25	L. 10 26.8	1.93	15 5.0	55 14.6	1.07	L. 10 32.5	1.69
15.5	15 27.0	56 35.8	1.25	U. 22 49.5	1.87	15 1.7	55 2.3	0.99	U. 22 52.8	1.69
16.0	15 23.0	56 20.8	1.25	L. 11 11.3	1.81	14 58.6	54 50.9	0.91	L. 11 13.1	1.70
16.5	15 19.0	56 5.9	1.23	U. 23 32.6	1.76	14 55.8	54 40.5	0.83	U. 23 33.5	1.72
17.0	15 15.1	55 51.2	1.21	L. 11 53.5	1.73	14 53.2	54 31.1	0.74	L. 11 54.2	1.74
17.5	15 11.1	55 36.9	1.18			14 50.9	54 22.7	0.65		
18.0	15 7.3	55 22.9	1.14	U. 0 14.1	1.71	14 48.9	54 15.3	0.56	U. 0 15.4	1.79
18.5	15 3.6	55 9.5	1.08	L. 12 34.5	1.70	14 47.2	54 9.1	0.46	L. 12 37.0	1.83
19.0	15 0.2	54 56.9	1.01	U. 0 54.8	1.70	14 45.9	54 4.2	0.35	U. 0 59.3	1.88
19.5	14 57.1	54 45.3	0.92	L. 13 15.4	1.72	14 44.9	54 0.7	0.23	L. 13 22.2	1.93
20.0	14 54.3	54 34.9	0.82	U. 1 36.2	1.74	14 44.5	53 58.8	—0.09	U. 1 45.6	1.98
20.5	14 51.8	54 25.8	0.70	L. 13 57.3	1.77	14 44.5	53 58.5	+0.05	L. 14 9.6	2.03
21.0	14 49.7	54 18.2	0.56	U. 2 18.8	1.81	14 44.9	54 0.0	0.20	U. 2 34.3	2.08
21.5	14 48.2	54 12.4	0.41	L. 14 40.7	1.85	14 45.8	54 3.5	0.37	L. 14 59.5	2.11
22.0	14 47.1	54 8.5	0.24	U. 3 3.3	1.89	14 47.2	54 9.1	0.55	U. 3 25.2	2.14
22.5	14 46.5	54 6.6	—0.07	L. 15 26.6	1.96	14 49.3	54 16.9	0.74	L. 15 51.1	2.16
23.0	14 46.6	54 6.9	+0.12	U. 3 50.5	2.02	14 52.1	54 26.9	0.93	U. 4 17.2	2.17
23.5	14 47.4	54 9.6	0.32	L. 16 15.1	2.07	14 55.4	54 39.2	1.12	L. 16 43.3	2.17
24.0	14 48.9	54 14.8	0.53	U. 4 40.4	2.12	14 59.4	54 53.8	1.31	U. 5 9.2	2.15
24.5	14 51.0	54 22.5	0.74	L. 17 6.0	2.15	15 4.0	55 10.9	1.51	L. 17 34.9	2.13
25.0	14 53.7	54 32.8	0.95	U. 5 32.1	2.18	15 9.2	55 30.3	1.71	U. 6 0.2	2.10
25.5	14 57.2	54 45.7	1.16	L. 17 58.6	2.20	15 15.0	55 52.0	1.88	L. 18 25.2	2.06
26.0	15 1.5	55 1.0	1.37	U. 6 25.2	2.21	15 21.5	56 15.7	2.04	U. 6 49.7	2.03
26.5	15 6.4	55 18.7	1.56	L. 18 51.8	2.20	15 28.6	56 41.3	2.19	L. 19 13.9	2.00
27.0	15 11.7	55 38.7	1.72	U. 7 18.2	2.18	15 36.1	57 8.6	2.32	U. 7 37.7	1.99
27.5	15 17.6	56 0.8	1.87	L. 19 44.3	2.16	15 43.7	57 37.1	2.41	L. 20 1.3	1.98
28.0	15 24.1	56 24.7	2.00	U. 8 10.0	2.13	15 51.5	58 6.3	2.43	U. 8 24.8	1.97
28.5	15 31.1	56 50.1	2.11	L. 20 35.3	2.10	15 59.5	58 35.8	2.44	L. 20 48.4	1.98
29.0	15 38.2	57 16.5	2.20	U. 10 0.3	2.07	16 7.5	59 5.1	2.39	U. 9 12.2	2.00
29.5	15 45.4	57 43.5	2.25	L. 21 25.0	2.04	16 15.2	59 33.3	2.26	L. 21 36.3	2.04
30.0	15 52.7	58 10.6	2.23	U. 9 49.4	2.03	16 22.1	59 59.4	2.06	U. 10 0.9	2.09
30.5	16 0.0	58 37.2	2.16	L. 22 13.5	2.02	16 28.4	60 22.8	1.82	L. 22 26.3	2.16
31.0	16 7.1	59 2.7	2.04	U. 10 37.5	2.01	16 33.9	60 43.1	1.53	U. 10 52.6	2.23
31.5	16 13.6	59 26.4	+1.88	L. 23 1.6	2.03	16 38.6	60 59.7	+1.20	L. 23 19.9	2.32

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

	NOVEMBER.					DECEMBER.				
Date.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Meridian Transit.	Hourly Diff.
d.	′ ″	′ ″	″	h. m.	m.	′ ″	′ ″	″	h. m.	m.
1.0	16 41.9	61 11.8	+0.82	U. 11 48.4	2.42	16 46.2	61 27.0	—0.42	L. 0 2.7	2.77
1.5	16 43.9	61 19.0	0.41			16 44.2	61 19.2	0.83	U. 12 36.5	2.79
2.0	16 44.6	61 21.2	+0.00	L. 0 18.1	2.52	16 40.7	61 6.5	1.23	L. 1 10.5	2.79
2.5	16 43.9	61 18.5	—0.41	U. 12 49.0	2.60	16 36.0	60 49.4	1.57	U. 13 44.1	2.76
3.0	16 41.9	61 11.0	0.80	L. 1 20.9	2.67	16 30.4	60 28.3	1.86	L. 2 16.9	2.68
3.5	16 38.6	60 59.0	1.16	U. 13 53.5	2.72	16 23.9	60 4.0	2.10	U. 14 48.4	2.56
4.0	16 34.3	60 42.8	1.48	L. 2 26.5	2.73	16 16.6	59 37.3	2.28	L. 3 18.4	2.44
4.5	16 29.1	60 23.2	1.74	U. 14 59.6	2.72	16 8.9	59 8.9	2.40	U. 15 46.9	2.32
5.0	16 23.0	60 0.8	1.94	L. 3 32.1	2.67	16 0.9	58 39.6	2.45	L. 4 13.9	2.20
5.5	16 16.2	59 36.3	2.09	U. 16 3.8	2.58	15 52.9	58 10.0	2.45	U. 16 39.4	2.08
6.0	16 9.1	59 10.4	2.18	L. 4 34.2	2.48	15 45.0	57 40.7	2.40	L. 5 3.7	1.97
6.5	16 2.0	58 43.7	2.22	U. 17 3.3	2.37	15 37.1	57 12.2	2 31	U. 17 26.7	1.89
7.0	15 54.7	58 16.8	2.21	L. 5 31.0	2.26	15 29.6	56 45.1	2.19	L. 5 48.8	1.82
7.5	15 47.6	57 50.3	2.17	U. 17 57.2	2.15	15 22.7	56 19.7	2.04	U. 18 10.2	1.76
8.0	15 40.5	57 24.6	2.09	L. 6 22.1	2.04	15 16.3	55 56.2	1.88	L. 6 31.0	1.73
8.5	15 33.7	57 0.0	2.00	U. 18 45.8	1.94	15 10.5	55 34.7	1.71	U. 18 51.5	1.70
9.0	15 27.3	56 36.7	1.89	L. 7 8.5	1.86	15 5.3	55 15.3	1.52	L. 7 11.7	1.69
9.5	15 21.4	56 15.0	1.74	U. 19 30.3	1.80	15 0.7	54 58.1	1.33	U. 19 31.8	1.69
10.0	15 15.9	55 54.9	1.60	L. 7 51.4	1.75	14 56.6	54 43.3	1.15	L. 7 52.1	1.71
10.5	15 10.9	55 36.4	1.47	U. 20 12.1	1.72	14 53.1	54 30.7	0.97	U. 20 12.7	1.73
11.0	15 6.4	55 19.5	1.34	L. 8 32.4	1.69	14 50.2	54 20.2	0.80	L. 8 33.7	1.77
11.5	15 2.3	55 04.3	1.20	U. 20 52.4	1.68	14 47.9	54 11.7	0.63	U. 20 55.0	1.81
12.0	14 58.6	54 50.8	1.07	L. 9 12.5	1.68	14 46.2	54 5.2	0.47	L. 9 16.9	1.86
12.5	14 55.4	54 38.9	0.94	U. 21 32.7	1.70	14 45.0	54 0.5	0.32	U. 21 39.4	1.91
13.0	14 52.6	54 28.5	0.80	L. 9 53.1	1.72	14 44.2	53 57.6	0.17	L. 10 2.7	1.97
13.5	14 50.4	54 19.6	0.68	U. 22 13.9	1.76	14 43.9	53 56.5	—0.04	U. 22 26.7	2.03
14.0	14 48.6	54 12.2	0.57	L. 10 35.1	1.80	14 43.9	53 56.9	+0.09	L. 10 51.3	2.07
14.5	14 47.0	54 6.2	0.46	U. 22 56.9	1.84	14 44.3	53 58.6	0.20	U. 23 16.5	2.11
15.0	14 45.4	54 1.5	0.35	L. 11 19.2	1.89	14 45.2	54 1.7	0.30	L. 11 42.2	2.14
15.5	14 44.2	53 58.1	0.24	U. 23 42.2	1.94	14 46.4	54 6.1	0.41		
16.0	14 43.6	53 55.9	0.13	L. 12 5.9	1.99	14 48.0	54 11.6	0.51	U. 0 8.2	2.16
16.5	14 43.4	53 54.9	—0.03			14 49.8	54 18.3	0.60	L. 12 34.3	2.17
17.0	14 43.5	53 55.3	+0.09	U. 0 30.3	2.05	14 51.8	54 26.1	0.70	U. 1 0.3	2.16
17.5	14 43.9	53 57.1	0.20	L. 12 55.2	2.09	14 54.3	54 35.1	0.79	L. 13 26.2	2.14
18.0	14 44.8	54 0.2	0.32	U. 1 20.6	2.12	14 57.0	54 45.2	0.89	U. 1 51.7	2.10
18.5	14 46.0	54 4.8	0.44	L. 13 46.3	2.15	15 0.2	54 56.4	0.99	L. 14 16.8	2.06
19.0	14 47.8	54 11.0	0.58	U. 2 12.3	2.16	15 3.6	55 8.9	1.09	U. 2 41.4	2.02
19.5	14 50.0	54 18.9	0.72	L. 14 38.3	2.16	15 7.3	55 22.6	1.19	L. 15 5.3	1.98
20.0	14 52.6	54 28.5	0.87	U. 3 4.2	2.14	15 11.3	55 37.6	1.30	U. 3 28.7	1.93
20.5	14 55.6	54 39.9	1.02	L. 15 29.8	2.12	15 15.8	55 53.9	1.41	L. 15 51.6	1.90
21.0	14 59.2	54 53.2	1.18	U. 3 55.0	2.07	15 20.5	56 11.5	1.51	U. 4 14.1	1.87
21.5	15 3.4	55 8.4	1.35	L. 16 19.7	2.04	15 25.6	56 30.4	1.62	L. 16 36.3	1.85
22.0	15 8.2	55 25.7	1.51	U. 4 43.9	2.00	15 31.1	56 50.5	1.72	U. 4 58.3	1.84
22.5	15 13.4	55 44.9	1.67	L. 17 7.7	1.97	15 36.8	57 11.8	1.81	L. 17 20.4	1.85
23.0	15 19.1	56 6.1	1.83	U. 5 31.0	1.94	15 42.8	57 34.1	1.89	U. 5 42.5	1.87
23.5	15 25.3	56 29.1	1.99	L. 17 54.0	1.91	15 49.1	57 57.2	1.95	L. 18 5.0	1.91
24.0	15 31.9	56 53.8	2.12	U. 6 16.8	1.90	15 55.6	58 20.9	1.97	U. 6 28.1	1.95
24.5	15 39.1	57 20.1	2.23	L. 18 39.5	1.89	16 2.2	58 44.8	1.97	L. 18 51.9	2.02
25.0	15 46.6	57 47.6	2.31	U. 7 2.2	1.90	16 8.6	59 8.5	1.94	U. 7 16.6	2.11
25.5	15 54.3	58 15.8	2.36	L. 19 25.1	1.93	16 14.7	59 31.5	1.86	L. 19 42.4	2.20
26.0	16 2.0	58 44.3	2.36	U. 7 48.4	1.97	16 20.6	59 53.3	1.73	U. 8 9.4	2.31
26.5	16 9.6	59 12.7	2.32	L. 20 12.1	2.02	16 26.1	60 13.2	1.54	L. 20 37.9	2.42
27.0	16 17.0	59 40.2	2.23	U. 8 36.7	2.09	16 30.8	60 30.5	1.31	U. 9 7.8	2.53
27.5	16 24.1	60 6.1	2.06	L. 21 2.3	2.18	16 34.7	60 44.6	1.04	L. 21 39.1	2.63
28.0	16 30.5	60 29.6	1.83	U. 9 29.0	2.28	16 37.5	60 55.1	0.71	U. 10 11.6	2.72
28.5	16 36.1	60 50.1	1.56	L. 21 57.0	2.38	16 39.2	61 1.5	+0.37	L. 22 45.0	2.77
29.0	16 40.6	61 6.9	1.23	U. 10 26.5	2.49	16 39.8	61 3.7	0.00	U. 11 18.8	2.79
29.5	16 43.9	61 19.3	0.85	L. 22 57.4	2.60	16 39.2	61 1.3	—0.38	L. 23 52.5	2.76
30.0	16 46.1	61 27.0	0.44	U. 11 29.5	2.70	16 37.3	60 54.2	0.77	U. 12 25.5	2.71
30.5	16 46.9	61 29.6	+0.01			16 34.1	60 42.6	1.13		
31.0	16 46.2	61 27.0	—0.42	L. 0 2.7	2.77	16 29.8	60 26.9	1.45	L. 0 57.6	2.62
31.5	16 44.2	61 19.2	—0.83	U. 12 36.5	2.79	16 24.5	60 7.5	—1.76	U. 13 28.4	2.51

WASHINGTON MEAN TIME.

PHASES.

Month.	First Quarter.	Full Moon.	Last Quarter.	New Moon.	First Quarter.	Full Moon.
	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.	d. h. m.
January	2 19 6.1	9 15 59.7	17 11 41.9	25 6 18.2		
February	1 3 12.6	8 6 44.9	16 9 11.5	23 18 49.9		
March	2 11 22.3	9 23 9.0	18 3 55.3	25 5 20.5	31 20 25.8	
April		8 16 20.4	16 18 52.1	23 14 6.0	30 7 9.5	
May		8 9 2.6	16 6 2.2	22 21 39.5	29 20 3.8	
June		7 0 14.6	14 14 2.1	21 4 55.4	28 11 11.8	
July		6 13 35.7	13 19 49.7	20 13 4.5	28 4 5.5	
August		5 1 20.6	12 0 34.0	18 23 18.2	26 21 56.4	
September		3 11 59.0	10 5 46.5	17 12 25.4	25 15 56.3	
October		2 22 0.6	9 12 46.1	17 4 30.3	25 8 57.0	
November		1 7 49.6	7 23 6.5	15 22 46.5	24 0 24.8	30 17 49.2
December			7 13 30.1	15 17 53.4	23 13 28.8	30 4 25.4

PERIGEE, APOGEE.

Month.	Perigee.	Apogee.	Perigee.	GREATEST LIBRATION.		
	d. h.	d. h.	d. h.	d. h. m.	d. h. m.	d. h. m.
January	5 0	17 10	29 17	11 5 26 N.W.	23 13 33 N.E.	
February		14 7	26 1	6 23 56 N.W.	20 7 31 N.E.	
March		14 0	26 7	5 5 8 N.W.	20 10 41 N.E.	
April		10 9	23 17	1 17 7 N.W.	17 16 26 N.E.	29 19 48 N.W.
May		7 11	22 3		15 19 26 N.E.	28 1 18 N.W.
June		3 18	19 9		12 12 6 N.E.	25 4 12 N.W.
July		1 9	17 2		9 4 52 N.E.	23 0 12 N.W.
July	29 2					
August	11 22	25 21		4 15 16 N.E.	19 6 47 N.W.	31 22 36 N.E.
September	6 20	22 16			14 16 9 N.W.	28 20 13 N.E.
October	4 15	20 8			11 9 52 N.W.	27 1 32 N.E.
November	2 0	16 15	30 12		8 5 30 N.W.	24 9 9 N.E.
December		13 15	29 0		6 11 29 N.W.	22 12 2 N.E.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination of the moon's equator 1° 28′.8,

Ω = mean longitude of moon's ascending node (see page 246),

C = the angle which the mean meridian of the moon's disc makes with the circle of declination reckoned from north to west on the apparent disc.

λ, β, a', and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

$$\Lambda\lambda = 0'.57 \sin 2\,(\lambda - \Omega),$$
$$a = \cos\,(\Omega - \lambda) \sin I,$$
$$\tan\beta = \sin\,(\Omega - \lambda) \tan I.$$

In these formulas, the tables p. 9 of the Appendix may be substituted.

The libration in latitude $= b = B - \beta$.

The libration in longitude $= l = \lambda + \Delta\lambda + a\,b - \text{☾}$.

$$\sin C = \sin i\,\frac{\cos\,(\text{☾} + l - \Omega + \Delta)}{\cos\delta'} = -\sin i\,\frac{\cos\,(a' - \Omega')}{\cos b}\,.$$

WASHINGTON MEAN TIME.

MOON'S EQUATOR.

Sidereal Date 0h.	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascending Node on Earth's Equator.	☾ Moon's Mean Longitude.
d.	° ′	° ′	° ′	° ′
0	22 0.6	191 29.1	359 15.7	340 50.4
10	22 0.5	190 55.4	359 17.8	112 14.6
20	22 0.3	190 21.7	359 20.0	243 38.9
30	22 0.2	189 48.1	359 22.1	15 3.1
40	22 0.0	189 14.4	359 24.3	146 27.4
50	21 59.9	188 40.7	359 26.4	277 51.6
60	21 59.8	188 7.0	359 28 6	49 15.9
70	21 59.6	187 33·3	359 30.7	180 40.1
80	21 59.5	186 59.6	359 32.9	312 4.4
90	21 59.3	186 25.9	359 35.0	83 28.6
100	21 59.2	185 52.2	359 37.2	214 52.9
110	21 59.1	185 18.5	359 39.4	346 17.1
120	21 59.0	184 44.8	359 41.6	117 41.4
130	21 58.9	184 11.1	359 43.7	249 5.6
140	21 58.8	183 37.4	359 45.9	20 29.9
150	21 58.7	183 3.7	359 48.1	151 54.1
160	21 58.6	182 30.0	359 50.3	283 18.3
170	21 58.5	181 56.3	359 52.5	54 42.6
180	21 58.5	181 22.6	359 54.6	186 6.8
190	21 58.4	180 48.9	359 56.8	317 31.1
200	21 58.4	180 15.2	359 59.0	88 55.3
210	21 58.4	179 41.5	0 1.2	220 19.6
220	21 58.5	179 7.8	0 3.4	351 43.8
230	21 58.5	178 34.2	0 5.5	123 8.1
240	21 58.5	178 0.5	0 7.7	254 32.3
250	21 58.6	177 26.8	0 9.9	25 56.6
260	21 58.6	176 53.1	0 12.1	157 20.8
270	21 58.7	176 19.4	0 14.3	288 45.1
280	21 58.8	175 45.8	0 16.4	60 9.4
290	21 58.9	175 12.1	0 18.6	191 33.6
300	21 59.0	174 38.4	0 20.8	322 57.8
310	21 59.1	174 4.7	0 23.0	94 22.0
320	21 59.2	173 31.0	0 25.1	225 46.3
330	21 59.3	172 57.4	0 27.3	357 10.5
340	21 59.5	172 23.7	0 29.4	128 34.8
350	21 59.6	171 50.0	0 31.6	259 59.0
360	21 59.7	171 16.3	0 33.8	31 23.2
370	21 59.8	170 42.6	0 35.9	162 47.5

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Jan. 1	19 46 41.03	46 58.65	−23 19 46.1	18 56.6	+9.45529	+9.9048	−3.97	+5.34	1 1 1.5	0
2	19 53 30.02	53 48.24	22 59 44.4	58 48.4	9.45076	9.9375	4.05	5.33	2 1 4.5	1
3	20 0 14.35	0 33.11	22 38 13.0	37 10.6	9.44534	9.9672	4.12	5.32	3 1 7.3	2
4	20 6 53.25	7 12.49	22 15 14.7	14 5.6	9.43890	9.9942	4.19	5.31	4 1 10.0	3
5	20 13 25.78	13 45.40	21 50 52.2	49 36.5	9.43227	0.0185	4.25	5.28	5 1 12.6	4
6	20 19 50.87	20 10.73	21 25 10.1	23 47.7	9.42219	0.0403	4.22	5.26	6 1 15.1	5
7	20 26 7.32	26 27.28	20 58 13.0	56 44.2	9.41144	0.0596	4.38	5.22	7 1 17.4	6
8	20 32 13.81	32 33.72	20 30 7.3	28 32.6	9.39866	0.0763	4.44	5.17	8 1 19.6	7
9	20 38 8.79	38 28.51	19 61 0.5	59 20.1	9.38352	0.0903	4.50	5.10	9 1 21.5	8
10	20 43 50.55	43 9.87	19 31 1.7	29 16.5	9.36541	0.1016	4.56	5.00	10 1 23.3	9
11	20 49 17.15	49 35.86	18 60 21.2	58 32.1	9.34378	0.1099	4.62	4.84	11 1 24.8	10
12	20 54 26.44	54 44.30	18 29 11.8	27 20.6	9.31776	0.1150	4.67	+4.51	12 1 25.9	11
13	20 59 16.09	59 32.88	17 57 47.6	55 54.0	9.28626	0.1165	4.73	−3.66	13 1 26.8	12
14	21 3 43.54	3 58.99	17 26 25.3	24 31.7	9.24777	0.1139	4.78	4.69	14 1 27.3	13
15	21 7 45.98	7 59.84	16 55 23.4	53 31.6	9.20009	0.1067	4.83	4.99	15 1 27.4	14
16	21 11 20.46	11 32.46	16 25 2.3	23 14.2	9.14008	0.0941	4.87	5.19	16 1 27.0	15
17	21 14 24.00	14 33.94	15 55 45.0	54 2.6	9.06250	0.0753	4.91	5.32	17 1 26.1	16
18	21 16 53.47	17 1.15	15 27 55.2	26 20.4	8.95805	0.0492	4.95	5.43	18 1 24.6	17
19	21 18 45.90	18 51.19	15 1 57.9	0 32.7	8.80703	0.0140	4.98	5.52	19 1 22.5	18
20	21 19 58.57	20 1.42	14 38 19.1	37 5.1	8.55252	9.9675	5.00	5.59	20 1 19.8	19
21	21 20 29.10	20 29.55	14 17 23.3	16 21.8	+7.76559	9.9067	5.02	5.65	21 1 16.3	20
22	21 20 15.80	20 14.01	13 59 33.8	58 45.5	−8.39576	9.8262	5.03	5.70	22 1 12.1	21
23	21 19 17.81	19 14.06	13 45 11.0	44 36.0	8.74706	9.7171	5.03	5.73	23 1 7.2	22
24	21 17 35.30	17 30.00	13 34 30.4	34 8.1	8.93565	9.5602	5.01	5.75	24 1 1.5	23
25	21 15 9.78	15 3.44	13 27 42.7	27 31.7	9.06117	9.3016	4.98	5.76	25 0 55.1	24
26	21 12 3.99	11 7.18	13 24 51.7	24 49.8	9.15095	+8.5727	4.93	5.75	26 0 48.1	25
27	21 8 22.31	8 15.65	13 25 52.6	23 57.5	9.21611	−9.0792	4.86	5.73	27 0 40.4	26
28	21 4 10.49	4 4.57	13 30 35.1	30 43.7	9.26245	9.4267	4.74	5.69	28 0 32.4	27
29	20 59 35.41	59 30.72	13 38 40.4	38 49.9	9.29318	9.6014	4.57	5.63	29 0 23.9	28
30	20 54 44.88	54 41.79	13 49 44.1	49 51.9	9.31016	9.7103	−4.23	5.56	30 0 15.1	29
31	20 49 47.19	49 45.89	14 3 17.2	3 21.0	9.31457	9.7826	+3.42	5.46	31 0 6.3	30
Feb. 1	20 44 50.60	44 51.12	14 18 49.0	18 47.3	9.30718	9.8306	4.33	5.31	0 23 57.5	31
2	20 40 2.87	40 5.05	14 35 46.5	0 38.4	9.28813	9.8613	4.59	5.14	1 23 48.8	32
3	20 35 31.34	35 34.89	14 53 40.9	53 26.0	9.25748	9.8783	4.72	4.82	2 23 40.4	33
4	20 31 21.67	31 26.21	15 12 2.6	11 41.4	9.21506	9.8845	4.81	−3.96	3 23 32.3	34
5	20 27 38.58	27 43.69	15 30 28.2	30 1.3	9.15962	9.8819	4.86	+4.61	4 23 24.7	35
6	20 24 25.49	24 30.71	15 48 36.9	48 5.3	9.08932	9.8717	4.89	4.91	5 23 17.5	36
7	20 21 44.55	21 49.46	16 6 11.8	5 36.6	9.00045	9.8549	4.90	5.06	6 23 10.9	37
8	20 19 36.93	19 41.17	16 22 59.1	22 21.7	8.88590	9.8319	4.91	5.15	7 23 4.9	38
9	20 18 2.84	18 6.15	16 38 47.9	38 8.6	8.73055	9.8036	4.90	5.19	8 22 58.4	39
10	20 17 1.83	17 3.90	16 53 31.9	52 52.6	8.49224	9.7697	4.89	5.24	9 22 53.4	40
11	20 16 32.90	16 33.55	17 7 3.2	6 25.7	−7.97004	9.7294	4.87	5.27	10 22 50.0	41
12	20 16 34.58	16 33.74	17 19 17.1	18 41.4	+8.05436	9.6838	4.84	5.27	11 22 46.1	42
13	20 17 5.30	17 2.92	17 30 14.4	29 41.3	8.48961	9.6309	4.81	5.30	12 22 42.6	43
14	20 18 3.23	17 59.28	17 39 48.8	39 19.1	8.69149	9.5680	4.79	5.30	13 22 39.6	44
15	20 19 26.61	19 21.12	17 48 0.2	47 34.3	8.82064	9.4938	4.75	5.31	14 22 37.0	45
16	20 21 13.57	21 6.59	17 54 47.4	54 25.8	8.91337	9.4033	4.72	5.31	15 22 34.8	46
17	20 23 22.31	23 13.92	17 60 9.9	59 53.0	8.98425	9.2883	4.68	5.31	16 22 33.0	47
18	20 25 51.14	25 41.41	18 4 7.6	3 55.7	9.04073	9.1305	4.65	5.31	17 22 31.5	48
19	20 28 38.46	28 27.51	18 6 39.7	6 33.2	9.08680	8.8790	4.61	5.31	18 22 30.4	49
20	20 31 42.69	31 30.60	18 7 46.3	7 44.8	9.12541	−8.2288	4.58	5.31	19 22 29.5	50
21	20 35 2.68	34 49.57	18 7 29.3	7 33.2	9.15767	+8.6269	4.53	5.32	20 22 28.8	51
22	20 38 36.67	38 22.64	18 5 45.3	5 54.6	9.18522	9.0063	4.50	5.30	21 22 28.5	52
23	20 42 23.62	42 8.83	18 2 38.0	2 52.7	9.20918	9.2035	4.46	5.31	22 22 28.3	53
24	20 46 22.71	46 7.14	17 58 6.0	58 26.0	9.23008	9.3392	4.42	5.31	23 22 28.3	54
25	20 50 32.70	50 16.50	17 52 10.0	52 35.3	9.24833	9.4418	4.38	5.30	24 22 28.5	55
26	20 54 52.73	54 35.99	17 44 50.5	45 21.0	9.26437	9.5245	4.34	5.30	25 22 28.9	56
27	20 59 21.93	59 4.73	17 36 7.4	36 42.9	9.27861	9.5934	4.30	5.30	26 22 29.4	57
28	21 3 59.63	3 42.05	17 26 2.2	26 42.5	9.29133	9.6525	4.27	5.30	27 22 20.1	58
29	21 8 45.07	8 27.19	17 14 34.4	15 19.5	9.30266	9.7047	4.24	5.29	28 22 30.9	59
30	21 13 37.66	13 19.52	17 1 44.1	2 33.6	9.31281	9.7508	4.20	5.29	29 22 31.8	60
31	21 18 36.87	18 18.57	−16 47 32.9	48 26.9	+9.32205	+9.7918	+4.17	+5.29	30 22 32.8	61

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Mar. 1	21 8 45.07	8 27 19	−17 14 34.4	15 19.5	+9.30266	+9.7047	+4.24	+5.29	0 22 30 9	59
2	21 13 37.66	13 19.52	17 1 44.1	2 33.6	9.31281	9.7508	4.20	5.29	1 22 31.8	60
3	21 18 36.87	18 18.57	16 47 32.9	48 26.9	9.32205	9.7918	4.17	5.29	2 22 32.8	61
4	21 23 42.10	23 23.71	16 32 1.9	32 59.9	9.33041	9.8293	4.13	5.30	3 22 34.1	62
5	21 28 52.99	28 34.53	16 15 10.0	16 12.0	9.33800	9.8642	4.10	5.28	4 22 35.3	63
6	21 34 10.14	33 51.68	15 56 56.2	58 1.9	9.34493	9.8961	4.07	5.28	5 22 36.6	64
7	21 39 30.15	39 11.73	15 37 23.9	38 33.0	9.35130	9.9254	4.04	5.28	6 22 38.0	65
8	21 44 55.71	44 37.38	15 16 32.0	17 44.3	9.35717	9.9528	4.01	5.27	7 22 39.5	66
9	21 50 25.53	50 7.31	14 54 21.4	55 36.2	9.36262	9.9734	3.99	5.27	8 22 41.0	67
10	21 55 59.37	55 41.32	14 30 52.6	32 10.0	9.36770	0.0002	3.96	5.27	9 22 42.6	68
11	22 1 37.01	1 19.17	14 6 6.0	7 26.1	9.37242	0.0251	3.93	5.27	10 22 44.3	69
12	22 7 18.19	7 0.59	13 40 2.2	41 24.5	9.37697	0.0466	3.94	5.26	11 22 46.0	70
13	22 13 2.98	12 45.63	13 12 40.8	14 5.0	9.38127	0.0670	3.89	5.26	12 22 47.9	71
14	22 18 51.00	18 33.93	12 44 3.4	45 29.1	9.38530	0.0862	3.89	5.26	13 22 49.7	72
15	22 24 42.25	24 25.49	12 14 9.8	15 36.7	9.38923	0.1045	3.88	5.25	14 22 51.6	73
16	22 30 36.63	30 20.21	11 43 0.9	44 28.9	9.39303	0.1220	3.87	5.25	15 22 53.6	74
17	22 36 34.06	36 18.01	11 10 36.9	12 5.5	9.39673	0.1387	3.86	5.25	16 22 55.6	75
18	22 42 34.54	42 18.87	10 36 58.9	38 27.9	9.40040	0.1546	3.86	5.24	17 22 57.7	76
19	22 48 38.06	48 22.80	10 2 7.0	3 36.0	9.40394	0.1699	3.84	5.24	18 22 59.8	77
20	22 54 44.48	54 29.64	9 26 1.5	27 30.3	9.40747	0.1845	3.87	5.23	19 23 2.0	78
21	23 0 53.96	0 39.57	8 48 43.7	50 11.9	9.41110	0.1985	3.87	5.23	20 23 4.2	79
22	23 7 6.53	6 52.61	8 10 13.8	11 41.1	9.41472	0.2120	3.87	5.22	21 23 6.4	80
23	23 13 22.22	13 8.79	7 30 32.8	31 58.8	9.41836	0.2249	3.89	5.21	22 23 8.8	81
24	23 19 41.10	19 28.19	6 49 41.4	51 5.8	9.42205	0.2373	3.90	5.22	23 23 11.1	82
25	23 26 3.25	25 50.87	6 7 40.5	9 2.9	9.42582	0.2491	3.91	5.20	24 23 13.6	83
26	23 32 28.76	32 16.94	5 24 31.7	25 51.7	9.42968	0.2606	3.93	5.18	25 23 16.0	84
27	23 38 57.78	38 46.54	4 40 13.7	41 31.0	9.43367	0.2716	3.94	5.19	26 23 18.6	85
28	23 45 30.41	45 19.78	3 55 50.5	57 4.7	9.43775	0.2819	3.96	5.17	27 23 21.2	86
29	23 52 6.81	51 56.82	3 8 22.8	9 33.6	9.44196	0.2919	3.97	5.16	28 23 23.9	87
30	23 58 47.13	58 37.79	2 20 51.3	21 58.2	9.44626	0.3014	3.98	5.14	29 23 26.6	88
31	0 5 31.45	5 22.81	1 32 18.6	33 21.2	9.45069	0.3104	4.01	5.12	30 23 29.4	90
Apr. 1	0 12 21.02	12 13.08	− 0 42 46.3	43 44.0	9.45525	0.3188	4.02	5.09	0 23 32.3	91
2	0 19 12.93	19 5.78	+ 0 7 42.8	6 50.2	9.45992	0.3269	4.04	5.05	1 23 35.2	92
3	0 26 10.36	26 4.02	0 59 6.2	58 19.2	9.46467	0.3343	4.05	5.01	2 23 38.2	93
4	0 33 12.42	33 6.92	1 51 20.4	50 39.5	9.46949	0.3410	4.06	4.95	3 23 41.3	94
5	0 40 19.24	40 14.62	2 44 21.6	43 47.3	9.47438	0.3444	4.07	4.88	4 23 44.5	95
6	0 47 30.90	47 27.21	3 38 5.3	37 37.7	9.47926	0.3526	4.07	4.79	5 23 47.8	96
7	0 54 47.45	54 44.75	4 32 26.5	32 6.3	9.48413	0.3571	4.07	4.61	6 23 51.1	97
8	1 2 8.89	2 7.22	5 27 19.4	27 6.9	9.48891	0.3609	4.07	+4.33	7 23 54.6	98
9	1 9 35.16	9 34.56	6 22 38.1	22 33.7	9.49355	0.3637	4.06	−3.08	8 23 58.1	99
10	1 17 6.15	17 6.72	7 18 13.8	18 18.0	9.49800	0.3654	4.03	4.41	10 0 1.9	100
11	1 24 41.64	24 43.34	8 13 58.8	14 11.2	9.50209	0.3660	4.01	4.69	11 0 5.3	101
12	1 32 21.36	32 24.26	9 9 43.5	10 4.5	9.50591	0.3653	3.96	4.94	12 0 9.1	102
13	1 40 4.84	40 8.98	10 5 37.6	6 7.2	9.50922	0.3633	3.90	5.03	13 0 12.8	103
14	1 47 52.63	47 58.05	11 0 31.6	1 9.8	9.51198	0.3595	3.80	5.15	14 0 16.7	104
15	1 55 41.06	55 47.76	11 55 9.3	55 55.7	9.51408	0.3542	3.66	5.25	15 0 20.5	105
16	2 3 32.39	3 40.39	12 49 2.6	49 57.0	9.51541	0.3472	+3.39	5.31	16 0 24.5	106
17	2 11 24.75	11 34.07	13 42 56.8	43 58.7	9.51599	0.3381	−2.86	5.36	17 0 28.4	107
18	2 19 17.14	19 27.73	14 33 37.9	34 46.4	9.51539	0.3273	3.43	5.36	18 0 32.3	108
19	2 27 8.43	27 20.27	15 23 57.8	25 12.1	9.51402	0.3145	3.67	5.43	19 0 36.3	109
20	2 34 57.78	35 10.81	16 12 41.0	14 0.9	9.51145	0.2991	3.92	5.49	20 0 40.1	110
21	2 42 43.64	42 57.80	16 59 33.5	60 57.6	9.50774	0.2817	4.03	5.51	21 0 44.0	111
22	2 50 25.05	50 40.23	17 44 33.1	46 0.3	9.50291	0.2622	4.14	5.53	22 0 47.7	112
23	2 58 0.68	58 16.80	18 27 23.3	28 52.4	9.49679	0.2399	4.23	5.55	23 0 51.4	113
24	3 5 29.31	5 46.25	19 7 59.0	9 28.9	9.48949	0.2153	4.29	5.55	24 0 54.9	114
25	3 12 49.85	13 7.49	19 46 14.3	47 44.2	9.48094	0.1892	4.35	5.56	25 0 58.3	115
26	3 20 1.17	20 19.37	20 22 3.7	23 32.3	9.47111	0.1585	4.39	5.56	26 1 1.5	116
27	3 27 2.22	27 20.84	20 55 25.2	56 51.6	9.46001	0.1261	4.43	5.56	27 1 4.6	117
28	3 33 52.03	34 10.94	21 26 16.3	27 39.4	9.44756	0.0907	4.47	5.56	28 1 7.5	118
29	3 40 29.64	40 48.09	21 54 36.2	55 55.2	9.43381	0.0521	4.50	5.55	29 1 10.2	119
30	3 46 54.28	47 11.32	22 20 25.6	21 39.9	9.41865	0.0100	4.52	5.54	30 1 12.6	120
31	3 53 5.10	53 24.01	+22 43 45.5	44 54.4	+9.40205	+9.9639	−4.54	−5.55	31 1 14.9	122

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
May 1	3 53 5.10	53 24.01	+22 43 45.5	44 54.4	+9.40205	+9.9639	−4.54	−5.55	1 1 14.9	122
2	3 59 1.39	59 20.01	23 4 38.3	5 41.2	9.38393	9.9131	4.56	5.54	2 1 16.9	123
3	4 4 42.51	5 0.69	23 23 5.0	24 1.5	9.36404	9.8569	4.59	5.53	3 1 18.6	124
4	4 10 7.60	10 25.22	23 39 11.7	40 1.5	9.34234	9.7939	4.60	5.53	4 1 20.1	125
5	4 15 16.27	15 33.20	23 52 59.0	53 41.8	9.31876	9.7219	4.61	5.51	5 1 21.3	126
6	4 20 7.88	20 24.02	24 4 31.3	5 7.0	9.29290	9.6381	4.63	5.50	6 1 22.2	127
7	4 24 41.83	24 57.06	24 13 52.0	14 20.5	9.26452	9.5373	4.64	5.49	7 1 22.8	128
8	4 28 57.68	29 11.90	24 21 5.0	21 26.4	9.23326	9.4105	4.65	5.47	8 1 23.1	129
9	4 32 54.87	33 7.99	24 26 14.1	26 28.4	9.19866	9.2366	4.66	5.46	9 1 23.1	130
10	4 36 32.98	36 44.95	24 29 22.7	29 30.2	9.16018	8.9546	4.67	5.45	10 1 22.7	131
11	4 39 51.56	40 2.30	24 30 34.5	30 35.3	9.11693	+8.0090	4.68	5.43	11 1 22.1	132
12	4 42 50.22	42 59.68	24 29 53.1	29 47.6	9.06803	−8.8277	4.69	5.42	12 1 21.1	133
13	4 45 28.60	45 36.80	24 27 21.8	27 10.5	9.01187	9.1533	4.69	5.41	13 1 19.8	134
14	4 47 46.43	47 53.35	24 23 4.1	22 47.3	8.94664	9.3325	4.70	5.39	14 1 18.1	135
15	4 49 43.50	49 49.14	24 17 3.3	16 41.6	8.86911	9.4554	4.70	5.38	15 1 16.1	136
16	4 51 19.69	51 24.07	24 9 23.1	8 57.0	8.77421	9.5481	4.70	5.36	16 1 13.8	137
17	4 52 34.92	52 38.11	23 60 6.7	59 36.9	8.65261	9.6218	4.70	5.35	17 1 11.1	138
18	4 53 29.32	58 31.40	23 49 18.0	48 45.3	8.48489	9.6818	4.70	5.33	18 1 8.0	139
19	4 54 3.05	54 4.11	23 37 0.7	36 25.7	8.21463	9.7334	4.69	5.30	19 1 4.7	140
20	4 54 16.57	54 16.72	23 23 19.7	23 43.2	+7.39431	9.7767	4.68	5.28	20 1 0.9	141
21	4 54 10.34	54 9.72	23 8 19.1	8 42.1	−8.03975	9.8136	4.66	5.25	21 0 56.9	142
22	4 53 45.13	53 43.88	22 52 5.0	51 28.3	8.37681	9.8451	4.64	5.21	22 0 52.5	143
23	4 53 1.87	53 0.15	22 34 43.2	34 7.6	8.55580	9.8719	4.61	5.16	23 0 47.9	144
24	4 52 1.65	51 59.62	22 16 20.9	15 47.3	8.67440	9.8942	4.57	5.10	24 0 42.9	145
25	4 50 45.89	50 43.72	21 57 6.0	56 35.2	8.75967	9.9124	4.53	5.02	25 0 37.7	146
26	4 49 16.10	49 13.95	21 37 7.1	36 39.8	8.82364	9.9266	4.47	4.91	26 0 32.3	147
27	4 47 34.03	47 32.04	21 16 34.6	16 11.5	8.87204	9.9365	4.40	4.74	27 0 26.7	148
28	4 45 41.63	45 39.94	20 55 39.0	55 20.7	8.90815	9.9425	4.30	−4.43	28 0 20.9	149
29	4 43 40.97	43 39.69	20 34 32.1	34 19.0	8.93397	9.9442	4.16	+4.46	29 0 14.9	150
30	4 41 34.29	41 33.49	20 13 26.4	13 18.6	8.95071	9.9415	3.96	4.54	30 0 8.9	151
31	4 39 23.85	39 23.59	19 52 35.0	52 32.6	8.95934	9.9342	−3.52	4.82	31 0 2.8	152
June 1	4 37 12.01	37 12.31	19 32 10.9	32 13.6	8.96013	9.9222	+3.34	4.99	0 23 57.7	153
2	4 35 1.09	35 1.93	19 12 27.6	12 35.1	8.95334	9.9047	3.88	5.11	1 23 50.6	154
3	4 32 53.31	32 54.65	18 53 37.9	53 49.6	8.93869	9.8817	4.11	5.20	2 23 44.6	155
4	4 30 50.94	30 52.70	18 35 54.3	36 9.5	8.91569	9.8522	4.26	5.27	3 23 38.6	156
5	4 28 56.06	28 58.14	18 19 28.6	19 46.4	8.88378	9.8157	4.35	5.32	4 23 32.8	157
6	4 27 10.52	27 12.81	18 4 30.0	4 49.4	8.84160	9.7709	4.43	5.37	5 23 27.1	158
7	4 25 36.04	25 38.39	17 51 8.8	51 28.7	8.78681	9.7160	4.48	5.40	6 23 21.6	159
8	4 24 14.13	24 16.41	17 39 31.7	39 51.2	8.71618	9.6494	4.52	5.42	7 23 16.3	160
9	4 23 6.14	23 8.18	17 29 43.6	30 0.5	8.62260	9.5653	4.56	5.45	8 23 11.3	161
10	4 22 13.22	22 14.89	17 21 52.6	22 7.9	8.49369	9.4568	4.59	5.45	9 23 6.4	162
11	4 21 36.27	21 37.42	17 15 58.2	16 10.1	8.29694	9.3111	4.60	5.45	10 23 1.9	163
12	4 21 16.05	21 16.55	17 12 2.3	12 9.9	−7.90196	9.0873	4.62	5.46	11 22 57.6	164
13	4 21 13.14	21 12.86	17 10 5.3	10 7.9	+7.62196	−8.6048	4.63	5.45	12 22 53.6	165
14	4 21 27.99	21 26.82	17 10 5.6	10 3.8	8.22131	+8.6070	4.64	5.44	13 22 49.9	166
15	4 22 0.95	21 58.79	17 12 1.0	11 52.2	8.46644	9.0760	4.64	5.43	14 22 46.5	167
16	4 22 52.18	22 48.96	17 15 47.8	15 32.8	8.62347	9.2904	4.64	5.41	15 22 43.4	168
17	4 24 1.80	23 57.45	17 21 22.1	20 59.2	8.73905	9.4606	4.64	5.39	16 22 40.5	169
18	4 25 29.93	25 24.40	17 28 38.8	28 10.1	8.83024	9.6019	4.64	5.37	17 22 38.1	170
19	4 27 16.48	27 9.72	17 37 32.6	36 58.8	8.90568	9.6044	4.64	5.34	18 22 35.9	171
20	4 29 21.53	29 13.51	17 47 56.3	47 16.6	8.96965	9.6653	4.64	5.31	19 22 34.1	172
21	4 31 44.90	31 35.63	17 59 44.7	58 59.3	9.02522	9.7152	4.64	5.27	20 22 32.6	173
22	4 34 26.58	34 16.05	18 12 50.0	11 59.4	9.07433	9.7559	4.64	5.24	21 22 31.2	174
23	4 37 26.55	37 14.76	18 27 5.6	26 10.4	9.11831	9.7895	4.64	5.18	22 22 30.3	175
24	4 40 44.54	40 31.53	18 42 23.1	41 23.8	9.15799	9.8173	4.64	5.12	23 22 29.6	176
25	4 44 20.64	44 6.42	18 58 35.8	57 33.0	9.19423	9.8397	4.64	5.04	24 22 29.3	177
26	4 48 14.79	47 59.44	19 15 34.1	14 28.6	9.22773	9.8577	4.64	4.96	25 22 29.2	178
27	4 52 26.98	52 10.55	19 33 10.7	32 3.3	9.25873	9.8717	4.64	4.85	26 22 29.4	179
28	4 56 57.09	56 39.64	19 51 16.9	50 8.9	9.28752	9.8818	4.63	4.69	27 22 29.9	180
29	5 1 45.13	1 26.73	20 9 43.8	8 34.8	9.31453	9.8878	4.63	4.39	28 22 30.8	181
30	5 6 51.03	6 31.77	20 28 20.8	27 12.4	9.33991	9.8902	4.63	+3.59	29 22 32.0	182
31	5 12 14.85	11 54.83	+20 46 59.5	45 52.5	+9.36393	+9.8886	+4.63	−4.33	30 22 33.4	183

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
July 1	5 12 14.85	11 54.83	+20 46 59.5	45 52.5	+9.36393	+9.8896	+4.63	−4.33	0 22 33.4	183
2	5 17 56.51	17 35.85	21 5 29.3	4 24.4	9.38654	9.8831	4.63	4.67	1 22 35.1	184
3	5 23 55.92	23 34.74	21 23 39.8	22 37.9	9.40792	9.8732	4.63	4.86	2 22 37.2	185
4	5 30 12.98	29 51.40	21 41 20.0	40 21.9	9.42817	9.8584	4.62	5.00	3 22 39.5	186
5	5 36 47.53	36 25.71	21 58 18.4	57 24.9	9.44726	9.8509	4.62	5.11	4 22 42.1	187
6	5 43 39.28	43 17.39	22 14 23.7	13 35.2	9.46523	9.8111	4.61	5.20	5 22 45.0	188
7	5 50 47.89	50 26.11	22 29 23.3	28 40.5	9.48210	9.7765	4.60	5.27	6 22 48.2	189
8	5 58 12.93	57 51.43	22 43 5.7	42 28.8	9.49782	9.7321	4.58	5.35	7 22 51.7	190
9	6 5 53.76	5 32.74	22 55 18.2	54 47.7	9.51230	9.6748	4.56	5.39	8 22 55.4	191
10	6 13 49.62	13 29.30	23 5 48.9	5 24.8	9.52564	9.6001	4.53	5.42	9 22 59.4	192
11	6 21 59.56	21 40.14	23 14 26.1	14 8.3	9.53764	9.4989	4.50	5.47	10 23 3.7	193
12	6 30 22.54	30 4.19	23 20 59.0	20 47.3	9.54831	9.3523	4.45	5.51	11 23 8.1	194
13	6 38 57.20	38 40.12	23 25 16.1	25 10.0	9.55756	9.1073	4.39	5.54	12 23 12.7	195
14	6 47 42.14	47 26.52	23 27 9.6	27 8.5	9.56541	+8.4069	4.32	5.56	13 23 17.5	196
15	6 56 35.75	56 21.75	23 26 31.7	26 34.8	9.57176	−8.9132	4.22	5.58	14 23 22.5	197
16	7 5 36.32	5 24.09	23 23 16.1	23 22.4	9.57663	9.2859	4.09	5.59	15 23 27.6	198
17	7 14 42.08	14 31.72	23 17 18.1	17 26.4	9.58002	9.4841	3.90	5.59	16 23 32.7	199
18	7 23 51.19	23 42.78	23 8 40.5	8 49.7	9.58186	9.6226	+3.56	5.61	17 23 38.0	200
19	7 33 1.81	32 55.40	22 57 13.9	57 22.9	9.58244	9.7269	−2.74	5.60	18 23 43.2	201
20	7 42 12.23	42 7.83	22 43 7.4	43 14.9	9.58161	9.8088	3.66	5.58	19 23 48.5	202
21	7 51 20.78	51 18.38	22 26 22.6	26 27.4	9.57950	9.8762	3.91	5.57	20 23 53.7	203
22	8 0 25.95	0 25.52	22 7 4.7	7 5.7	9.57625	9.9325	4.06	5.55	21 23 58.9	204
23	8 9 26.34	9 27.80	21 45 19.7	45 16.0	9.57190	9.9801	4.16	5.52	23 0 3.9	205
24	8 18 20.76	18 24.04	21 21 15.7	21 6.4	9.56664	0.0208	4.22	5.50	24 0 8.9	206
25	8 27 8.21	27 13.21	20 55 0.9	54 45.2	9.56053	0.0557	4.28	5.47	25 0 13.8	207
26	8 35 47.82	35 54.44	20 26 43.9	26 21.4	9.55371	0.0858	4.31	5.43	26 0 18.5	208
27	8 44 18.93	44 27.06	19 56 33.8	56 4.0	9.54626	0.1118	4.34	5.40	27 0 23.1	209
28	8 52 41.05	52 50.56	19 24 39.8	24 2.3	9.53829	0.1344	4.36	5.36	28 0 27.5	210
29	9 0 53.77	1 4.53	18 51 10.8	50 25.5	9.52988	0.1540	4.37	5.32	29 0 31.8	211
30	9 8 56.83	9 8.75	18 16 15.8	15 22.6	9.52122	0.1709	4.37	5.27	30 0 35.9	212
31	9 16 50.27	17 3.24	17 40 3.3	39 2.2	9.51227	0.1854	4.38	5.22	31 0 39.9	213
Aug. 1	9 24 33.84	24 47.75	17 2 41.2	1 32.3	9.50308	0.1983	4.37	5.18	1 0 43.7	214
2	9 32 7.67	32 22.40	16 24 17.5	23 0.9	9.49381	0.2093	4.37	5.12	2 0 47.3	215
3	9 39 31.83	39 47.31	15 44 59.2	43 35.3	9.48442	0.2187	4.36	5.06	3 0 50.7	216
4	9 46 46.50	47 2.64	15 4 53.2	3 22.2	9.47504	0.2267	4.35	5.00	4 0 54.0	217
5	9 53 51.85	54 8.56	14 24 5.8	22 28.0	9.46560	0.2336	4.34	4.94	5 0 57.2	218
6	10 0 48.07	1 5.28	13 42 43.0	40 58.6	9.45621	0.2392	4.34	4.86	6 1 0.2	219
7	10 7 35.41	7 53.05	12 60 50.3	58 59.7	9.44687	0.2440	4.32	4.78	7 1 3.0	220
8	10 14 14.11	14 32.12	12 18 32.7	16 36.4	9.43759	0.2478	4.31	4.68	8 1 5.7	221
9	10 20 44.40	21 2.72	11 35 55.1	33 53.4	9.42837	0.2508	4.29	4.57	9 1 8.3	222
10	10 27 6.58	27 25.16	10 53 2.1	50 55.4	9.41917	0.2531	4.28	4.44	10 1 10.7	223
11	10 33 20.75	33 39.53	10 9 57.1	7 45.9	9.41018	0.2547	4.27	4.27	11 1 13.0	224
12	10 39 27.31	39 46.21	9 26 45.2	24 29.8	9.40122	0.2556	4.25	3.89	12 1 15.2	225
13	10 45 26.39	45 45.44	8 43 29.7	41 10.5	9.39233	0.2559	4.24	−3.23	13 1 17.2	226
14	10 51 18.24	51 37.34	7 60 13.4	57 50.7	9.38348	0.2558	4.23	+3.72	14 1 19.1	227
15	10 57 3.04	57 22.23	7 16 59.4	14 33.7	9.37479	0.2550	4.22	4.25	15 1 20.9	228
16	11 2 40.99	3 0.19	6 33 52.6	31 24.5	9.36607	0.2530	4.21	4.29	16 1 22.6	229
17	11 8 12.24	8 31.42	5 50 54.0	48 23.6	9.35738	0.2520	4.20	4.48	17 1 24.2	230
18	11 13 36.92	13 56.04	5 8 7.9	5 35.6	9.34867	0.2497	4.19	4.54	18 1 25.7	231
19	11 18 55.17	19 14.20	4 25 36.0	23 2.3	9.33995	0.2470	4.18	4.62	19 1 27.0	232
20	11 24 7.08	24 26.00	3 43 21.6	40 46.9	9.33118	0.2437	4.18	4.68	20 1 28.3	233
21	11 29 12.73	29 31.51	2 61 27.3	58 51.9	9.32235	0.2401	4.17	4.74	21 1 29.4	234
22	11 34 12.19	34 30.81	2 19 55.7	17 20.0	9.31339	0.2358	4.17	4.79	22 1 30.5	235
23	11 39 5.48	39 23.90	1 38 49.7	36 14.1	9.30428	0.2311	4.17	4.83	23 1 31.4	236
24	11 43 52.62	44 10.80	0 58 11.7	55 36.6	9.29493	0.2259	4.17	4.87	24 1 32.2	237
25	11 48 33.55	48 51.48	+ 0 18 4.4	15 30.1	9.28528	0.2201	4.18	4.91	25 1 33.0	238
26	11 53 8.24	53 25.89	− 0 21 29.0	24 2.1	9.27536	0.2136	4.18	4.94	26 1 33.6	239
27	11 57 36.62	57 53.96	1 0 26.2	2 57.7	9.26497	0.2066	4.19	4.97	27 1 34.1	240
28	12 1 58.50	2 15.49	1 38 44.2	41 13.7	9.25412	0.1989	4.20	5.00	28 1 34.5	241
29	12 6 13.78	6 30.37	2 16 19.6	18 46.6	9.24273	0.1904	4.21	5.04	29 1 34.8	242
30	12 0 21.28	1 37.43	1 53 9.4	55 33.5	9.23061	0.8810	4.23	5.07	30 1 35.0	243
31	12 14 23.71	14 39.41	− 3 29 10.1	31 31.0	+9.21770	−0.1708	−4.24	+5.10	31 1 35.1	244

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Sept. 1	12 18 17.84	18 33.04	− 4 4 18.2	6 35.5	+9.20384	−0.1595	−4.26	+5.14	1 1 35.1	245
2	12 22 4.34	22 19.00	4 38 29.6	40 42.7	9.18873	0.1471	4.29	5.16	2 1 34.9	246
3	12 25 42.76	25 56.82	5 11 40.2	13 48.7	9.17228	0.1334	4.31	5.20	3 1 34.6	247
4	12 29 12.73	29 26.16	5 43 45.6	45 49.1	9.15426	0.1181	4.33	5.22	4 1 34.1	248
5	12 32 33.74	32 46.49	6 14 40.7	16 38.7	9.13427	0.1010	4.36	5.26	5 1 33.5	249
6	12 35 45.22	35 57.23	6 44 20.5	46 12.5	9.11199	0.0819	4.39	5.29	6 1 32.8	250
7	12 38 46.58	38 57.79	7 12 39.5	14 24.9	9.08681	0.0601	4.42	5.31	7 1 31.8	251
8	12 41 37.09	41 47.46	7 39 29.1	41 7.5	9.05809	0.0354	4.45	5.35	8 1 30.7	252
9	12 44 15.97	44 25.44	8 4 45.1	6 16.0	9.02505	0.0072	4.48	5.39	9 1 29.4	253
10	12 46 42.37	46 50.89	8 28 18.6	29 41.4	8.98659	9.9744	4.51	5.43	10 1 27.9	254
11	12 48 55.37	49 2.89	8 50 1.4	51 15.7	8.94097	9.9358	4.54	5.46	11 1 26.1	255
12	12 50 53.95	51 0.42	9 9 43.9	10 49.1	8.88602	9.8896	4.57	5.50	12 1 24.1	256
13	12 52 37.04	52 42.42	9 27 16.2	28 12.0	8.81790	9.8333	4.60	5.53	13 1 21.9	257
14	12 54 3.45	54 7.72	9 42 27.3	43 13.3	8.73038	9.7627	4.63	5.57	14 1 19.4	258
15	12 55 12.02	55 15.15	9 55 5.3	55 41.2	8.61190	9.6704	4.66	5.60	15 1 16.6	259
16	12 56 1.48	56 3.48	10 4 57.2	5 22.8	8.43504	9.5418	4.69	5.63	16 1 13.5	260
17	12 56 30.61	56 31.50	10 11 49.7	12 5.0	+8.10264	9.3396	4.72	5.67	17 1 10.0	261
18	12 56 38.17	56 37.99	10 15 28.3	15 33.5	−7.42935	−8.8963	4.74	5.70	18 1 6.2	262
19	12 56 23.03	56 21.87	10 15 38.3	15 33.9	8.27397	+8.8518	4.76	5.73	19 1 2.0	263
20	12 55 44.23	55 42.19	10 12 5.4	11 52.1	8.54997	9.3632	4.77	5.76	20 0 57.4	264
21	12 54 41.03	54 38.28	10 4 35.5	4 14.6	8.72085	9.6016	4.78	5.78	21 0 52.4	265
22	12 53 12.99	53 9.71	9 52 56.7	52 29.6	8.84393	9.7603	4.78	5.79	22 0 47.0	266
23	12 51 20.14	51 16.55	9 36 59.0	36 27.8	8.93879	9.8795	4.77	5.80	23 0 41.2	267
24	12 49 3.04	48 59.43	9 16 36.3	16 3.3	9.01363	9.9739	4.74	5.80	24 0 35.0	268
25	12 46 23.10	46 19.74	8 51 48.6	51 16.7	9.07349	0.0507	4.71	5.79	25 0 28.4	269
26	12 43 22.07	43 19.23	8 22 41.8	22 13.9	9.12064	0.1134	4.64	5.77	26 0 21.5	270
27	12 40 3.01	40 0.97	7 49 30.8	49 10.0	9.15597	0.1644	4.53	5.73	27 0 14.2	271
28	12 36 29.73	36 28.70	7 12 39.1	12 28.2	9.18029	0.2043	4.36	5.64	28 0 6.8	272
29	12 32 46.87	32 47.00	6 32 42.9	32 44.3	9.19382	0.2339	4.01	5.54	28 23 59.2	273
30	12 28 59.76	29 1.10	5 50 24.8	50 40.1	9.19625	0.2537	−3.61	5.33	29 23 51.5	274
Oct. 1	12 25 14.32	25 16.81	5 6 38.2	7 7.9	9.18688	0.2634	+4.28	+4.84	0 23 43.8	275
2	12 21 36.87	21 40.34	4 22 22.9	23 6.4	9.16448	0.2629	4.53	−4.93	1 23 37.2	276
3	12 18 13.63	18 17.79	3 38 42.5	39 38.3	9.12731	0.2518	4.69	5.37	2 23 28.9	277
4	12 15 10.61	15 15.10	2 56 40.1	57 45.1	9.07230	0.2330	4.79	5.58	3 23 22.0	278
5	12 12 33.21	12 37.60	2 17 16.6	18 26.4	8.99454	0.1950	4.86	5.71	4 23 15.5	279
6	12 10 25.98	10 29.85	1 41 26.4	42 37.4	8.88390	0.1470	4.91	5.79	5 23 9.4	280
7	12 8 52.50	8 55.43	1 9 55.1	11 3.0	8.71791	0.0830	4.94	5.85	6 23 3.9	281
8	12 7 55.30	7 56.92	0 43 17.9	44 18.8	8.42393	9.9989	4.96	5.89	7 22 59.0	282
9	12 7 35.73	7 35.75	0 22 0.0	22 50.3	−6.43270	9.8869	4.96	5.91	8 22 54.7	283
10	12 7 54.19	7 52.40	− 0 6 15.6	6 52.7	+8.41428	9.7302	4.96	5.91	9 22 51.1	284
11	12 8 50.15	8 46.44	+ 0 3 50.7	3 28.3	8.71216	9.4826	4.94	5.91	10 22 48.1	285
12	12 10 22.27	10 16.62	0 8 22.4	8 16.8	8.88070	+8.8755	4.92	5.89	11 22 45.6	286
13	12 12 28.59	12 21.06	0 7 28.0	7 38.8	8.99518	−9.1495	4.89	5.86	12 22 43.8	287
14	12 15 6.77	14 57.46	+ 0 1 29.2	1 56.2	9.07963	9.5415	4.85	5.85	13 22 42.4	288
15	12 18 14.20	18 3.28	− 0 9 18.8	8 36.2	9.14412	9.7349	4.80	5.80	14 22 41.6	289
16	12 21 47.77	21 35.43	0 24 32.0	23 35.4	9.19480	9.8567	4.75	5.76	15 22 41.2	290
17	12 25 44.92	25 31.36	0 43 46.3	42 37.3	9.23548	9.9421	4.70	5.72	16 22 41.2	291
18	12 30 2.79	29 48.24	1 6 36.4	5 16.4	9.26820	0.0081	4.64	5.66	17 22 41.5	292
19	12 34 38.71	34 23.41	1 32 37.5	31 8.6	9.29396	0.0581	4.57	5.60	18 22 42.2	293
20	12 39 30.24	39 14.30	2 1 25.9	59 49.5	9.31632	0.0973	4.51	5.54	19 22 43.9	294
21	12 44 35.12	44 18.77	2 32 38.4	30 56.4	9.33391	0.1285	4.43	5.47	20 22 44.2	295
22	12 49 51.31	49 34.69	3 5 54.8	4 8.8	9.34835	0.1531	4.37	5.41	21 22 45.5	296
23	12 55 17.19	55 0.46	3 40 53.7	39 5.1	9.36009	0.1726	4.28	5.32	22 22 47.0	297
24	13 0 51.04	0 34.25	4 17 17.7	15 27.6	9.36502	0.1880	4.20	5.22	23 22 48.6	298
25	13 6 31.51	6 14.89	4 54 51.6	53 1.2	9.37738	0.2000	4.13	5.12	24 22 50.3	299
26	13 12 17.62	12 1.20	5 33 20.5	31 30.8	9.38382	0.2089	4.05	5.00	25 22 52.2	300
27	13 18 8.34	17 52.20	6 12 30.0	10 41.8	9.38866	0.2155	3.96	4.86	26 22 54.1	301
28	13 24 2.86	23 47.04	6 52 9.3	50 23.1	9.39328	0.2200	3.88	4.68	27 22 56.0	302
29	13 30 0.56	29 45.11	7 32 8.7	30 25.2	9.39682	0.2228	3.80	4.41	28 22 58.0	303
30	13 36 0.91	35 45.88	8 12 18.9	10 38.7	9.39973	0.2240	3.72	−3.78	29 22 50.1	304
31	13 42 3.44	41 48.85	8 52 31.6	50 54.7	9.40217	0.2237	3.64	+4.18	30 22 52.2	305
32	13 48 7.78	47 53.64	− 9 32 38.7	31 5.8	+9.40419	−0.2225	+3.61	+4.29	31 22 54.3	306

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of *t*.		Log. Coefficient of t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Nov. 1	13 48 7.78	47 53.64	− 9 32 38.7	31 5.8	+9.40419	−0.2225	+3.61	+4.29	0 22 54 3	306
2	13 54 13.82	54 0.19	10 12 37.8	11 8.9	9.40601	0.2201	3.50	4.62	1 23 6.5	307
3	14 0 21.21	0 8.09	10 52 19.8	50 55.3	9.40753	0.2167	3.48	4.70	2 23 8.7	308
4	14 6 29.84	6 17.27	11 31 40.7	30 20.7	9.40891	0.2124	3.42	4.79	3 23 10.9	309
5	14 12 39.58	12 27.52	12 10 36.2	9 20.7	9.41022	0.2074	3.41	4.84	4 23 13.1	310
6	14 18 50.40	18 38.88	12 49 2.9	47 51.9	9.41141	0.2015	3.38	4.89	5 23 15.3	311
7	14 25 2.22	24 51.26	13 26 56.9	25 50.5	9.41264	0.1950	3.41	4.93	6 23 17.6	312
8	14 31 15.10	31 4.70	14 4 15.5	3 13.7	9.41379	0.1879	3.37	4.96	7 23 19.9	313
9	14 37 28.94	37 19.11	14 40 56.2	39 58.9	9.41497	0.1800	3.41	5.01	8 23 22.2	314
10	14 43 43.85	43 34.57	15 16 54.8	16 2.0	9.41623	0.1715	3.41	5.01	9 23 24.4	315
11	14 49 59.84	49 41.11	15 52 10.8	51 22.3	9.41747	0.1624	3.42	5.04	10 23 26.6	316
12	14 56 16.92	56 8.80	16 26 41.3	25 57.6	9.41879	0.1527	3.45	5.06	11 23 29.2	317
13	15 2 35.17	2 27.67	16 60 24.4	59 44.9	9.42009	0.1423	3.45	5.08	12 23 31.5	318
14	15 8 54.59	8 47.70	17 33 17.9	32 42.6	9.42154	0.1312	3.50	5.09	13 23 33.9	319
15	15 15 15.32	15 9.04	18 5 20.7	4 49.5	9.42308	0.1195	3.52	5.10	14 23 36.3	320
16	15 21 37.43	21 31.78	18 36 30.8	36 3.6	9.42454	0.1070	3.48	5.12	15 23 38.7	321
17	15 28 0.80	27 55.78	19 6 46.1	6 22.8	9.42604	0.0937	3.52	5.13	16 23 41.2	322
18	15 34 25.55	34 21.18	19 36 5.1	35 45.5	9.42770	0.0797	3.57	5.14	17 23 43.7	323
19	15 40 51.83	40 48.11	20 4 27.1	4 11.0	9.42942	0.0649	3.56	5.15	18 23 46.2	324
20	15 47 19.64	47 16.59	20 31 49.9	31 37.2	9.43113	0.0491	3.57	5.16	19 23 48.7	325
21	15 53 48.99	53 46.69	20 58 9.7	58 0.2	9.43287	0.0327	3.58	5.16	20 23 51.2	326
22	16 0 19.99	0 18.31	21 23 32.6	23 26.2	9.43469	0.0147	3.59	5.18	21 23 53.8	327
23	16 6 52.51	6 51.53	21 47 49.6	47 46.1	9.43646	9.9952	3.59	5.19	22 23 56.4	328
24	16 13 26.66	13 26.40	22 11 1.9	11 1.0	9.43825	9.9748	3.60	5.20	24 0 0.9	329
25	16 20 2.51	20 2.98	22 33 8.3	33 9.8	9.44010	9.9528	3.60	5.22	25 0 1.7	330
26	16 26 39.99	26 41.20	22 54 6.2	54 9.9	9.44189	9.9291	3.59	5.22	26 0 4.4	331
27	16 33 19.12	33 21.09	23 13 55.6	14 1.2	9.44363	9.9037	3.60	5.23	27 0 7.1	332
28	16 39 59.88	40 2.62	23 32 34.6	32 42.0	9.44542	9.8759	3.58	5.24	28 0 9.8	333
29	16 46 42.22	46 45.75	23 50 1.4	50 10.3	9.44710	9.8459	3.57	5.25	29 0 12.6	334
30	16 53 26.12	53 30.44	24 6 15.2	6 25.2	9.44875	9.8128	3.55	5.26	30 0 15.4	335
Dec. 1	17 0 11.51	0 16.68	24 21 14.0	21 24.9	9.45028	9.7765	3.53	5.26	1 0 18.2	336
2	17 6 58.31	7 4.27	24 34 56.8	35 8.3	9.45173	9.7354	3.50	5.27	2 0 21.1	337
3	17 13 46.43	13 53.22	24 47 21.3	47 33.0	9.45309	9.6897	3.47	5.27	3 0 23.9	338
4	17 20 35.79	20 43.43	24 58 27.8	58 39.4	9.45425	9.6377	3.48	5.29	4 0 26.8	339
5	17 27 26.14	27 34.61	25 8 13.1	8 24.3	9.45531	9.5772	3.36	5.29	5 0 29.7	340
6	17 34 17.44	34 26.77	25 16 36.8	16 47.2	9.45615	9.5058	3.22	5.30	6 0 32.6	341
7	17 41 9.43	41 19.61	25 23 37.3	23 46.5	9.45682	9.4517	3.15	5.31	7 0 35.6	342
8	17 48 2.10	48 13.14	25 29 13.3	29 21.1	9.45732	9.3077	2.89	5.32	8 0 38.5	343
9	17 54 55.00	55 6.89	25 33 23.5	33 29.4	9.45749	9.1554	+1.86	5.32	9 0 41.4	344
10	18 1 47.94	2 0.67	25 36 6.6	36 10.2	9.45738	8.9148	−2.86	5.33	10 0 44.4	345
11	18 8 40.58	8 54.14	25 37 21.6	37 22.6	9.45686	−8.3175	3.17	5.35	11 0 47.3	346
12	18 15 32.62	15 46.98	25 37 7.7	37 5.9	9.45599	+8.5772	3.41	5.34	12 0 50.3	347
13	18 22 23.57	22 38.72	25 35 24.1	35 18.6	9.45468	9.0166	3.52	5.34	13 0 53.2	348
14	18 29 13.15	29 29.06	25 32 9.1	31 59.8	9.45295	9.2225	3.67	5.34	14 0 56.1	349
15	18 36 0.80	36 17.43	25 27 24.7	27 11.2	9.45053	9.3622	3.79	5.34	15 0 58.9	350
16	18 42 45.88	43 3.18	25 21 8.1	20 50.0	9.44746	9.4677	3.88	5.34	16 1 1.7	351
17	18 49 27.84	49 45.72	25 13 20.3	12 57.3	9.44363	9.5523	3.97	5.34	17 1 4.5	352
18	18 56 5.86	56 24.32	25 4 1.9	3 33.7	9.43898	9.6226	4.04	5.38	18 1 7.2	353
19	19 2 39.21	2 58.14	24 53 13.4	52 39.8	9.43327	9.6826	4.14	5.37	19 1 9.8	354
20	19 9 6.98	9 25.29	24 40 56.2	40 16.8	9.42639	9.7344	4.20	5.36	20 1 12.3	355
21	19 15 28.11	15 47.68	24 27 12.0	26 27.0	9.41814	9.7795	4.27	5.29	21 1 14.7	356
22	19 21 41.44	22 1.16	24 12 3.4	11 12.7	9.40827	9.8190	4.34	5.27	22 1 17.0	357
23	19 27 45.63	28 5.34	23 55 34.2	54 37.7	9.39644	9.8537	4.40	5.24	23 1 19.1	358
24	19 33 39.17	33 58.71	23 37 48.0	36 45.9	9.38234	9.8839	4.47	5.19	24 1 21.0	359
25	19 39 20.42	39 39.63	23 18 50.1	17 42.8	9.36539	9.9101	4.53	5.14	25 1 22.8	360
26	19 44 47.44	45 6.06	22 58 47.3	57 35.2	9.34510	9.9322	4.59	5.06	26 1 24.3	361
27	19 49 58.27	50 16.16	22 37 46.8	36 30.4	9.32062	9.9504	4.65	4.95	27 1 25.5	362
28	19 54 50.36	55 7.25	22 15 58.2	14 38.6	9.29079	9.9646	4.71	4.77	28 1 26.4	363
29	19 59 21.18	60 36.80	21 53 32.0	52 10.0	9.25425	9.9747	4.77	+4.39	29 1 27.0	364
30	20 3 27.87	3 41.95	21 30 41.1	29 17.9	9.20873	9.9803	4.82	−4.11	30 1 27.1	365
31	20 7 7.28	7 19.57	21 7 39.7	6 16.6	9.15126	9.9811	4.86	4.75	31 1 26.8	366
32	20 10 16.25	10 26.51	−20 44 43.6	43 22.1	+9.07667	+9.9765	−4.91	−5.01	32 1 26.0	367

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Jan. 1	21 36 58.64	37 32.22	−16 6 46.6	3 48.9	+9.29086	+0.0139	−3.57	+4.76	1 2 51.9	0
2	21 41 39.20	42 12.75	15 41 48.0	38 46.7	9.28846	0.0209	3.57	4.74	2 2 52.7	1
3	21 46 18.21	46 51.70	15 16 25.8	13 20.9	9.28603	0.0275	3.56	4.73	3 2 53.4	2
4	21 50 55.68	51 29.09	14 50 40.8	47 32.5	9.28363	0.0338	3.57	4.71	4 2 54.0	3
5	21 55 31.62	56 4.96	14 24 33.8	21 22.3	9.28124	0.0398	3.56	4.70	5 2 54.6	4
6	22 0 6.04	0 39.32	13 58 5.5	54 50.9	9.27887	0.0455	3.56	4.67	6 2 55.2	5
7	22 4 38.96	5 12.19	13 31 16.9	27 59.1	9.27649	0.0508	3.56	4.66	7 2 55.9	6
8	22 9 10.39	9 43.56	13 4 8.8	0 47.9	9.27410	0.0559	3.55	4.64	8 2 56.5	7
9	22 13 40.34	14 13.43	12 36 41.9	33 18.1	9.27173	0.0608	3.54	4.62	9 2 57.0	8
10	22 18 8.83	18 41.85	12 8 57.0	5 30.4	9.26939	0.0654	3.53	4.60	10 2 57.6	9
11	22 22 35.89	23 8.83	11 40 54.9	37 25.7	9.26709	0.0697	3.52	4.58	11 2 58.1	10
12	22 27 1.55	27 34.39	11 12 36.4	9 4.7	9.26479	0.0738	3.51	4.55	12 2 58.5	11
13	22 31 25.82	31 58.58	10 44 2.3	40 28.1	9.26255	0.0777	3.51	4.53	13 2 59.0	12
14	22 35 48.74	36 21.43	10 15 13.3	11 36.8	9.26034	0.0813	3.50	4.51	14 2 59.5	13
15	22 40 10.33	40 42.93	9 46 10.2	42 31.4	9.25816	0.0847	3.48	4.48	15 2 59.9	14
16	22 44 30.62	45 3.12	9 16 53.7	13 12.7	9.25601	0.0879	3.48	4.45	16 3 0.3	15
17	22 48 49.63	49 22.04	8 47 24.5	43 41.6	9.25388	0.0909	3.48	4.43	17 3 0.6	16
18	22 53 7.39	53 39.71	8 17 43.5	13 58.8	9.25176	0.0938	3.46	4.40	18 3 1.0	17
19	22 57 23.90	57 56.12	7 47 51.3	44 4.9	9.24968	0.0964	3.45	4.37	19 3 1.3	18
20	23 1 39.20	2 11.32	7 17 48.7	14 0.7	9.24766	0.0988	3.44	4.33	20 3 1.6	19
21	23 5 53.33	6 25.36	6 47 36.5	43 46.9	9.24569	0.1010	3.43	4.29	21 3 1.9	20
22	23 10 6.31	10 38.25	6 17 15.4	13 24.4	9.24374	0.1030	3.42	4.25	22 3 2.2	21
23	23 14 18.16	14 50.00	5 46 46.2	42 53.9	9.24182	0.1049	3.42	4.20	23 3 2.4	22
24	23 18 28.91	19 0.64	5 16 9.5	12 16.1	9.23990	0.1066	3.41	4.15	24 3 2.6	23
25	23 22 38.57	23 10.19	4 45 26.2	41 31.8	9.23805	0.1080	3.41	4.10	25 3 2.8	24
26	23 26 47.17	27 18.70	4 14 37.1	10 41.7	9.23621	0.1093	3.40	4.03	26 3 3.0	25
27	23 30 54.72	31 26.15	3 43 42.8	39 46.5	9.23436	0.1104	3.38	3.94	27 3 3.2	26
28	23 35 1.23	35 32.56	3 12 44 1	8 47.1	9.23255	0.1114	3.37	3.83	28 3 3.4	27
29	23 39 6.73	39 37.96	2 41 41.7	37 44.1	9.23082	0.1121	3.37	3.68	29 3 3.5	28
30	23 43 11.26	43 42.40	2 10 36.4	6 38.3	9.22910	0.1127	3.37	3.46	30 3 3.7	29
31	23 47 14.82	47 45.85	1 39 29.0	35 30.5	9.22737	0.1131	3.36	+2.16	31 3 3.8	30
Feb. 1	23 51 17.41	51 48.32	1 8 20.3	4 21.6	9.22563	0.1133	3.35	−1.38	32 3 3.9	31
2	23 55 19.04	55 49.84	0 37 10.9	33 12.2	9.22392	0.1133	3.34	2.23	33 3 4.0	32
3	23 59 19.73	59 50.43	− 0 6 1.6	2 2.8	9.22227	0.1133	3.34	3.59	34 3 4.0	33
4	0 3 19.52	3 50.12	+ 0 25 7.0	29 5.8	9.22063	0.1131	3.33	3.76	35 3 4.1	35
5	0 7 18.41	7 48.89	0 56 14.0	60 12.6	9.21901	0.1126	3.32	3.86	36 3 4.1	36
6	0 11 16.41	11 46.80	1 27 18.6	31 16.9	9.21742	0.1120	3.32	3.94	37 3 4.2	37
7	0 15 13.55	15 43.83	1 58 20.2	2 18.1	9.21582	0.1112	3.31	4.01	38 3 4.2	38
8	0 19 9.82	19 39.99	2 29 18.2	33 15.6	9.21425	0.1103	3.30	4.06	39 3 4.2	39
9	0 23 5.24	23 35.29	3 0 12.0	4 8.7	9.21271	0.1092	3.31	4.13	40 3 4.1	40
10	0 26 59.83	27 29.77	3 31 0.9	34 56.9	9.21115	0.1080	3.30	4.18	41 3 4.1	41
11	0 30 53.58	31 23.41	4 1 44.2	5 39.4	9.20961	0.1066	3.29	4.22	42 3 4.1	42
12	0 34 46.51	35 16.22	4 32 21.2	36 15.5	9.20810	0.1050	3.28	4.25	43 3 4.0	43
13	0 38 38.64	39 8.24	5 2 51.3	6 44.6	9.20662	0.1033	3.29	4.29	44 3 3.9	44
14	0 42 29.98	42 59.47	5 33 13.9	37 6.1	9.20514	0.1015	3.29	4.33	45 3 3.9	45
15	0 46 20.52	46 49.89	6 3 28.4	7 19.4	9.20362	0.0994	3.29	4.36	46 3 3.8	46
16	0 50 10.25	50 39.50	6 33 34.0	37 23.7	9.20210	0 0972	3.29	4.38	47 3 3.7	47
17	0 53 59.18	54 28.30	7 3 30.1	7 18.4	9.20059	0.0948	3.29	4.41	48 3 3.5	48
18	0 57 47.32	58 16.33	7 33 16.2	37 2.9	9.19910	0.0923	3.29	4.43	49 3 3.4	49
19	1 1 34.67	2 3.55	8 2 51.6	6 36.7	9.19756	0.0896	3.31	4.45	50 3 3.2	50
20	1 5 21.21	5 49.95	8 32 15.7	35 59.1	9.19596	0.0868	3.31	4.48	51 3 3.0	51
21	1 9 6.91	9 35.51	9 1 27.8	5 9.5	9.19434	0.0837	3.32	4.51	52 3 2.9	52
22	1 12 51.75	13 20.22	9 30 27.3	34 7.1	9.19271	0.0805	3.35	4.53	53 3 2.7	53
23	1 16 35.74	17 4.07	9 59 13.6	62 51.4	9.19105	0.0771	3.37	4.55	54 3 2.5	54
24	1 20 18.86	20 47.03	10 27 46.0	31 21.7	9.18931	0.0734	3.36	4.55	55 3 2.2	55
25	1 24 1.06	24 29.07	10 56 3.8	59 37.3	9.18749	0.0697	3.39	4.58	56 3 2.0	56
26	1 27 42.31	28 10.17	11 24 6.4	27 37.6	9.18561	0.0656	3.41	4.60	57 3 1.7	57
27	1 31 22.59	31 50.28	11 51 53.1	55 21.9	9.18365	0.0614	3.43	4.62	58 3 1.4	58
28	1 35 1.85	35 29.36	12 19 23.3	22 49.6	9.18159	0.0570	3.45	4.64	59 3 1.1	59
29	1 38 40.04	39 7.37	12 46 36.3	50 0.1	9.17941	0.0523	3.46	4.65	60 3 0.8	60
30	1 42 17.11	42 44.25	13 13 31.5	16 52.7	9.17713	0.0474	3.49	4.66	61 3 0.5	61
31	1 45 53.02	46 19.95	+13 40 8 2	43 26.7	+9.17475	+0.0423	−3.51	−4.67	62 3 0.1	62

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Mar. 1	1 38 40.04	39 7.37	+12 46 36.3	50 0.1	+9.17941	+0.0523	−3.46	−4.65	60 3 0.8	60
2	1 42 17.11	42 44.25	13 13 31.5	16 52.7	9.17713	0.0474	3.49	4.66	61 3 0.5	61
3	1 45 53.02	46 19.95	13 40 8.2	43 26.7	9.17475	0.0423	3.51	4.67	62 3 0.1	62
4	1 49 27.72	49 54.43	14 6 25.8	9 41.4	9.17223	0.0370	3.53	4.68	63 2 59.8	63
5	1 53 1.13	53 27.63	14 32 23.7	35 36.3	9.16952	0.0314	3.56	4.69	64 2 59.4	64
6	1 56 33.18	56 59.46	14 58 1.2	61 10.8	9.16670	0.0255	3.58	4.70	65 2 59.0	65
7	2 0 3.82	0 29.86	15 23 17.7	26 24.3	9.16373	0.0195	3.60	4.73	66 2 58.6	66
8	2 3 32.98	3 58.75	15 48 12.7	51 16.2	9.16058	0.0132	3.62	4.74	67 2 58.1	67
9	2 7 0.58	7 26.07	16 12 45.7	15 45.9	9.15722	0.0066	3.62	4.76	68 2 57.6	68
10	2 10 26.54	10 51.75	16 36 56.0	39 52.8	9.15369	9.9997	3.64	4.76	69 2 57.1	69
11	2 13 50.78	14 15.71	17 0 43.0	3 36.4	9.14995	9.9925	3.66	4.77	70 2 56.6	70
12	2 17 13.22	17 37.83	17 24 6.2	26 56.1	9.14600	9.9851	3.69	4.78	71 2 56.0	71
13	2 20 33.76	20 58.04	17 47 5.1	49 51.4	9.14175	9.9774	3.71	4.79	72 2 55.4	72
14	2 23 52.28	24 16.22	18 9 39.3	12 21.8	9.13723	9.9693	3.73	4.80	73 2 54.7	73
15	2 27 8.69	27 32.28	18 31 48.1	34 26.9	9.13248	9.9609	3.75	4.81	74 2 54.0	74
16	2 30 22.90	30 46.12	18 53 31.0	56 6.1	9.12742	9.9522	3.77	4.81	75 2 53.3	75
17	2 33 34.78	33 57.61	19 14 47.5	17 18.8	9.12204	9.9432	3.80	4.82	76 2 52.5	76
18	2 36 44.21	37 6.64	19 35 37.1	38 4.5	9.11626	9.9337	3.82	4.83	77 2 51.8	77
19	2 39 51.05	40 13.06	19 55 59.3	58 22.6	9.11008	9.9239	3.84	4.84	78 2 51.0	78
20	2 42 55.16	43 16.73	20 15 53.5	18 12.7	9.10349	9.9136	3.87	4.85	79 2 50.1	79
21	2 45 56.40	46 17.50	20 35 19.2	37 34.3	9.09643	9.9029	3.89	4.85	80 2 49.2	80
22	2 48 54.60	49 15.22	20 54 15.8	56 26.7	9.08884	9.8917	3.91	4.87	81 2 48.2	81
23	2 51 49.60	52 9.72	21 12 42.8	14 49.4	9.08070	9.8799	3.93	4.87	82 2 47.2	82
24	2 54 41.23	55 0.81	21 30 39.5	32 41.7	9.07194	9.8676	3.96	4.88	83 2 46.1	83
25	2 57 29.29	57 48.31	21 48 5.3	50 3.1	9.06247	9.8546	3.98	4.89	84 2 44.9	84
26	3 0 13.58	0 32.01	22 4 59.6	6 52.9	9.05225	9.8410	4.00	4.90	85 2 43.7	85
27	3 2 53.90	3 11.73	22 21 21.8	23 10.5	9.04123	9.8267	4.03	4.91	86 2 42.4	86
28	3 5 30.04	5 47.25	22 37 11.2	38 55.3	9.02933	9.8115	4.05	4.92	87 2 41.1	87
29	3 8 1.78	8 18.34	22 52 27.1	54 6.6	9.01643	9.7955	4.07	4.93	88 2 39.7	88
30	3 10 28.88	10 44.75	23 7 8.8	8 43.6	9.00235	9.7784	4.10	4.94	89 2 38.2	89
31	3 12 51.08	13 06.24	23 21 15.4	22 45.4	8.98694	9.7602	4.12	4.95	90 2 36.6	90
Apr. 1	3 15 8.11	15 22.55	23 34 46.1	36 11.2	8.97019	9.7408	4.14	4.96	91 2 35.0	91
2	3 17 19.73	17 33.42	23 47 40.1	49 0.3	8.95195	9.7200	4.16	4.97	92 2 33.2	92
3	3 19 25.68	19 38.59	23 59 56.6	61 11.8	8.93194	9.6976	4.18	4.98	93 2 31.3	93
4	3 21 25.68	21 37.78	24 11 34.7	12 44.9	8.90997	9.6734	4.20	4.99	94 2 29.4	94
5	3 23 19.45	23 30.73	24 22 33.4	23 38.5	8.88555	9.6471	4.21	5.00	95 2 27.3	95
6	3 25 6.72	25 17.16	24 32 51.7	33 51.7	8.85872	9.6183	4.23	5.01	96 2 25.1	96
7	3 26 47.22	26 56.81	24 42 28.5	43 23.5	8.82904	9.5868	4.25	5.02	97 2 22.9	97
8	3 28 20.66	28 29.39	24 51 22.8	52 12.7	8.79540	9.5518	4.27	5.04	98 2 20.5	98
9	3 29 46.74	29 54.59	24 59 33.4	60 18.1	8.75741	9.5126	4.28	5.05	99 2 18.0	99
10	3 31 5.17	31 12.13	25 6 59.0	7 38.5	8.71432	9.4679	4.29	5.06	100 2 15.4	100
11	3 32 15.67	32 21.76	25 13 38.2	14 12.6	8.66479	9.4168	4.31	5.07	101 2 12.6	101
12	3 33 18.01	33 23.21	25 19 29.7	19 59.0	8.60694	9.3573	4.32	5.09	102 2 9.7	102
13	3 34 11.93	34 16.25	25 24 32.2	24 56.4	8.53808	9.2858	4.33	5.10	103 2 6.6	103
14	3 34 57.19	35 0.66	25 28 44.1	29 3.3	8.45368	9.1969	4.34	5.12	104 2 3.4	104
15	3 35 33.55	35 36.18	25 32 3.6	32 17.9	8.34516	9.0802	4.35	5.13	105 2 0.1	105
16	3 36 0.77	36 2.58	25 34 28.9	34 38.3	8.19652	8.9139	4.36	5.14	106 1 56.6	106
17	3 36 18.66	36 19.67	25 35 58.3	36 2.9	7.96254	8.6305	4.37	5.16	107 1 52.9	107
18	3 36 27.05	36 27.30	25 36 30.2	36 30.2	+7.40155	+7.3467	4.37	5.17	108 1 49.1	108
19	3 36 25.80	36 25.33	25 36 2.8	35 58.5	−7.62626	−8.5975	4.38	5.19	109 1 45.2	109
20	3 36 14.79	36 13.66	25 34 34.1	34 25.6	8.04358	8.9190	4.38	5.20	110 1 41.0	110
21	3 35 53.94	35 52.21	25 32 2.0	31 49.5	8.25326	9.1062	4.37	5.21	111 1 36.8	111
22	3 35 23.22	35 20.93	25 28 24.6	28 8.5	8.39406	9.2399	4.37	5.22	112 1 32.3	112
23	3 34 42.66	34 39.87	25 23 40.2	23 20.8	8.49956	9.3439	4.37	5.23	113 1 27.7	113
24	3 33 52.34	33 49.12	25 17 47.3	17 24.8	8.58382	9.4296	4.36	5.24	114 1 22.9	114
25	3 32 52.36	32 48.80	25 10 44.3	10 19.3	8.65368	9.5023	4.35	5.25	115 1 18.0	115
26	3 31 42.88	31 39.10	25 2 29.7	2 2.8	8.71251	9.5661	4.33	5.25	116 1 12.9	116
27	3 30 24.17	30 20.26	24 53 2.3	52 34.1	8.76260	9.6228	4.31	5.25	117 1 7.7	117
28	3 28 56.60	28 52.63	24 42 21.6	41 52.4	8.80557	9.6729	4.28	5.25	118 1 2.3	118
29	3 27 20.61	27 16.66	24 30 27.6	29 57.8	8.84265	9.7175	4.25	5.24	119 0 56.7	119
30	3 25 36.69	25 32.86	24 17 20.4	16 50.9	8.87478	9.7577	4.21	5.23	120 0 51.1	120
31	3 23 45.39	23 41.77	+24 3 0.6	2 32.4	−8.90250	−9.7942	−4.16	−5.22	121 0 45.3	121

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
May 1	3 23 45.39	23 41.77	+24 3 0.6	2 32.4	−8.90250	−9.7942	−4.16	−5.22	121 0 45.3	121
2	3 21 47.34	21 44.01	23 47 29.6	47 3.3	8.92608	9.8271	4.10	5.21	122 0 39.5	122
3	3 19 43.28	19 40.32	23 30 49.5	30 25.5	8.94575	9.8566	4.01	5.18	123 0 33.5	123
4	3 17 34.03	17 31.52	23 13 3.2	12 42.2	8.96179	9.8829	3.92	5.16	124 0 27.4	124
5	3 15 20.46	15 18.46	22 54 14.4	53 57.2	8.97438	9.9062	3.77	5.11	125 0 21.3	125
6	3 13 3.49	13 2.04	22 34 27.4	34 14.8	8.98369	9.9267	3.56	5.06	126 0 15.1	126
7	3 10 44.05	10 43.19	22 13 47.1	13 39.5	8.98990	9.9445	−3.10	5.00	127 0 8.8	127
8	3 8 23.11	8 22.86	21 52 18.9	52 16.6	8.99301	9.9597	+3.08	4.92	128 0 2.5	128
9	3 6 1.66	6 2.03	21 30 9.1	30 12.4	8.99304	9.9722	3.56	4.81	128 23 56.3	129
10	3 3 40.71	3 41.69	21 7 24.8	7 34.1	8.98987	9.9821	3.78	4.67	129 23 50.0	130
11	3 1 21.28	1 22.84	20 44 13.4	44 29.2	8.98350	9.9893	3.92	4.45	130 23 43.7	131
12	2 59 4.36	59 6.46	20 20 42.5	21 4.7	8.97396	9.9940	4.01	−3.99	131 23 37.5	132
13	2 56 50.87	56 53.48	19 56 59.8	57 28.3	8.96137	9.9965	4.09	+3.99	132 23 31.3	133
14	2 54 41.64	54 44.72	19 33 13.1	33 47.6	8.94568	9.9966	4.14	4.45	133 23 25.2	134
15	2 52 37.45	52 40.90	19 9 30.4	10 10.5	8.92671	9.9940	4.19	4.66	134 23 19.3	135
16	2 50 39.02	50 42.75	18 45 59.5	46 44.8	8.90426	9.9893	4.23	4.80	135 23 13.5	136
17	2 48 47.01	48 50.95	18 22 47.6	23 37.8	8.87811	9.9822	4.26	4.89	136 23 7.7	137
18	2 47 2.01	47 6.10	18 0 1.5	0 56.1	8.84789	9.9730	4.28	4.97	137 23 2.0	138
19	2 45 24.54	45 28.69	17 37 47.5	38 45.8	8.81319	9.9614	4.30	5.02	138 22 56.4	139
20	2 43 55.04	43 59.15	17 16 11.8	17 13.0	8.77340	9.9475	4.32	5.07	139 22 51.0	140
21	2 42 33.87	42 37.84	16 55 20.0	56 23.4	8.72796	9.9313	4.33	5.10	140 22 45.7	141
22	2 41 21.29	41 25.05	16 35 16.9	36 21.9	8.67581	9.9129	4.34	5.13	141 22 40.6	142
23	2 40 17.49	40 20.97	16 16 6.5	17 12.4	8.61543	9.8924	4.34	5.16	142 22 35.6	143
24	2 39 22.61	39 25.74	15 57 52.1	58 58.3	8.54390	9.8695	4.34	5.17	143 22 30.7	144
25	2 38 36.78	38 39.48	15 40 36.6	41 42.4	8.45727	9.8442	4.34	5.17	144 22 26.0	145
26	2 38 0.06	38 2.27	15 24 22.8	25 27.4	8.34855	9.8160	4.34	5.20	145 22 21.5	146
27	2 37 32.45	37 34.11	15 9 12.8	10 15.6	8.20393	9.7850	4.33	5.20	146 22 17.1	147
28	2 37 13.89	37 14.95	14 55 7.9	56 8.5	7.98901	9.7513	4.33	5.20	147 22 12.9	148
29	2 37 4.28	37 4.70	14 42 8.6	43 6.5	−7.55006	9.7147	4.32	5.20	148 22 8.8	149
30	2 37 3.54	37 3.27	14 30 15.0	31 9.7	+7.41218	9.6746	4.32	5.21	149 22 4.8	150
31	2 37 11.56	37 10.56	14 19 27.3	20 18.3	7.93541	9.6302	4.31	5.20	150 22 0.9	151
June 1	2 37 28.19	37 26.44	14 9 45.6	10 32.5	8.16241	9.5807	4.30	5.20	151 21 57.3	152
2	2 37 53.24	37 50.72	14 1 9.6	1 52.1	8.30791	9.5254	4.29	5.19	152 21 53.8	153
3	2 38 26.54	38 23.24	13 53 38.2	54 16.1	8.41498	9.4642	4.28	5.17	153 21 50.4	154
4	2 39 7.92	39 3.78	13 47 9.7	47 42.9	8.49898	9.3946	4.27	5.17	154 21 47.1	155
5	2 39 57.18	39 52.18	13 41 42.8	42 11.1	8.56755	9.3126	4.26	5.16	155 21 43.9	156
6	2 40 54.11	40 48.27	13 37 16.5	37 39.5	8.62540	9.2138	4.24	5.14	156 21 41.0	157
7	2 41 58.50	41 51.82	13 33 49.3	34 6.9	8.67485	9.0913	4.23	5.12	157 21 38.1	158
8	2 43 10.12	43 2.60	13 31 18.9	31 31.3	8.71809	8.9284	4.22	5.11	158 21 35.3	159
9	2 44 28.77	44 20.40	13 29 43.2	29 50.5	8.75641	8.6761	4.20	5.09	159 21 32.7	160
10	2 45 54.25	45 45.03	13 29 0.4	29 2.4	8.79054	−8.0512	4.19	5.07	160 21 30.2	161
11	2 47 26.34	47 16.28	13 29 8.6	29 5.3	8.82112	+8.3718	4.17	5.05	161 21 27.7	162
12	2 49 4.82	48 53.93	13 30 5.7	29 57.2	8.84879	8.7523	4.16	5.03	162 21 25.4	163
13	2 50 49.46	50 37.76	13 31 49.2	31 35.7	8.87394	8.9441	4.14	5.01	163 21 23.2	164
14	2 52 40.06	52 27.56	13 34 16.9	33 58.4	8.89694	9.0716	4.13	4.99	164 21 21.2	165
15	2 54 36.43	54 23.13	13 37 26.8	37 3.4	8.91810	9.1663	4.12	4.96	165 21 19.1	166
16	2 56 38.38	56 24.30	13 41 16.9	40 48.8	8.93767	9.2399	4.10	4.94	166 21 17.2	167
17	2 58 45.74	58 30.89	13 45 44.9	45 12.3	8.95576	9.2992	4.08	4.91	167 21 15.4	168
18	3 0 58.30	0 42.71	13 50 48.5	50 11.6	8.97253	9.3487	4.07	4.88	168 21 13.6	169
19	3 3 15.89	2 59.57	13 56 25.7	55 44.6	8.98808	9.3906	4.05	4.85	169 21 11.9	170
20	3 5 38.31	5 21.28	14 2 34.5	1 49.4	9.00248	9.4267	4.04	4.82	170 21 10.4	171
21	3 8 5.37	7 47.65	14 9 12.9	8 24.0	9.01590	9.4575	4.02	4.80	171 21 8.9	172
22	3 10 36.93	10 18.53	14 16 18.9	15 26.4	9.02861	9.4849	4.01	4.76	172 21 7.5	173
23	3 13 12.88	12 53.81	14 23 50.6	22 54.7	9.04071	9.5087	4.00	4.73	173 21 6.1	174
24	3 15 53.09	15 33.37	14 31 46.1	30 47.0	9.05212	9.5294	3.98	4.68	174 21 4.8	175
25	3 18 37.43	18 17.08	14 40 3.5	39 1.4	9.06278	9.5479	3.97	4.65	175 21 3.7	176
26	3 21 25.74	21 4.78	14 48 41.2	47 36.3	9.07280	9.5640	3.96	4.62	176 21 2.5	177
27	3 24 17.90	23 56.34	14 57 37.4	56 29.9	9.08237	9.5785	3.95	4.57	177 21 1.4	178
28	3 27 13.82	26 51.67	15 6 50.6	5 40.6	9.09155	9.5911	3.93	4.51	178 21 0.4	179
29	3 30 13.39	29 50.67	15 16 19.1	15 6.9	9.10028	9.6021	3.92	4.45	179 20 59.4	180
30	3 33 16.52	32 53.24	15 26 1.3	24 47.2	9.10859	9.6118	3.91	4.41	180 20 58.5	181
31	3 36 23.11	35 59.30	+15 35 55.7	34 39.8	+9.11654	+9.6202	+3.90	+4.35	181 20 57.7	182

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor *t*.		Log. Factor *t*².		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
July 1	3 36 23.11	35 59.30	+15 35 55.7	34 39.8	+9.11654	+9.6202	+3.90	+4.35	181 20 57.7	182
2	3 39 33.08	39 8.74	15 46 0.9	44 43.3	9.12417	9.6274	3.89	4.29	182 20 56.9	183
3	3 42 46.36	42 21.49	15 56 15.4	54 56.4	9.13153	9.6335	3.88	4.18	183 20 56.1	184
4	3 46 2.88	45 37.50	16 6 37.7	5 17.5	9.13861	9.6383	3.87	4.06	184 20 55.4	185
5	3 49 22.55	48 56.69	16 17 6.2	15 45.0	9.14537	9.6421	3.86	3.94	185 20 54.8	186
6	3 52 45.28	52 18.96	16 27 39.6	26 17.6	9.15184	9.6451	3.85	3.78	186 20 54.3	187
7	3 56 11.01	55 44.25	16 38 16.7	36 54.1	9.15809	9.6471	3.84	+3.38	187 20 53.8	188
8	3 59 39.69	59 12.48	16 48 56.1	47 33.1	9.16416	9.6482	3.83	−2.68	188 20 53.4	189
9	4 3 11.25	2 43.60	16 59 36.6	58 13.3	9.17002	9.6486	3.82	3.64	189 20 52.9	190
10	4 6 45.63	6 17.56	17 10 16.8	8 53.4	9.17569	9.6477	3.81	3.86	190 20 52.6	191
11	4 10 22.77	9 54.29	17 20 55.2	19 32.0	9.18115	9.6461	3.80	3.98	191 20 52.2	192
12	4 14 2.60	13 33.73	17 31 30.6	30 7.8	9.18635	9.6437	3.79	4.10	192 20 51.9	193
13	4 17 45.04	17 15.80	17 42 1.9	40 39.6	9.19140	9.6404	3.78	4.18	193 20 51.7	194
14	4 21 30.04	21 0.44	17 52 27.9	51 6.3	9.19629	9.6364	3.77	4.26	194 20 51.5	195
15	4 25 17.54	24 47.60	18 2 47.6	1 26.8	9.20100	9.6315	3.76	4.32	195 20 51.4	196
16	4 29 7.49	28 37.21	18 12 59.7	11 39.9	9.20560	9.6258	3.75	4.37	196 20 51.2	197
17	4 32 59.84	32 29.22	18 23 3.1	21 44.4	9.21002	9.6190	3.74	4.41	197 20 51.1	198
18	4 36 54.52	36 23.59	18 32 56.6	31 39.3	9.21429	9.6114	3.72	4.45	198 20 51.1	199
19	4 40 51.46	40 20.25	18 42 39.2	41 23.4	9.21836	9.6029	3.72	4.49	199 20 51.1	200
20	4 44 50.62	44 19.12	18 52 9.9	50 55.7	9.22233	9.5935	3.71	4.53	200 20 51.1	201
21	4 48 51.94	48 20.18	19 1 27.8	0 15.3	9.22619	9.5831	3.70	4.55	201 20 51.2	202
22	4 52 55.38	52 23.36	19 10 31.8	9 21.2	9.22993	9.5716	3.68	4.58	202 20 51.3	203
23	4 57 0.88	56 28.61	19 19 21.0	18 12.5	9.23349	9.5591	3.67	4.60	203 20 51.4	204
24	5 1 8.37	0 35.87	19 27 54.5	26 48.2	9.23693	9.5454	3.67	4.62	204 20 51.6	205
25	5 5 17.80	4 45.09	19 36 11.3	35 7.3	9.24031	9.5305	3.66	4.64	205 20 51.8	206
26	5 9 29.16	8 56.24	19 44 10.7	43 9.1	9.24362	9.5144	3.64	4.66	206 20 52.1	207
27	5 13 42.40	13 9.29	19 51 51.9	50 52.8	9.24678	9.4968	3.62	4.67	207 20 52.4	208
28	5 17 57.45	17 24.17	19 59 14.0	58 17.6	9.24979	9.4777	3.62	4.68	208 20 52.7	209
29	5 22 14.25	21 40.81	20 6 16.3	5 22.6	9.25274	9.4569	3.61	4.70	209 20 53.0	210
30	5 26 32.79	25 59.18	20 12 57.9	12 7.0	9.25564	9.4340	3.60	4.73	210 20 53.4	211
31	5 30 53.03	30 19.27	20 19 18.0	18 30.1	9.25844	9.4090	3.58	4.74	211 20 53.8	212
Aug. 1	5 35 14.92	34 41.03	20 25 15.9	24 31.0	9.26110	9.3817	3.58	4.76	212 20 54.2	213
2	5 39 38.40	39 4.39	20 30 50.9	30 9.0	9.26370	9.3514	3.56	4.77	213 20 54.6	214
3	5 44 3.44	43 29.32	20 36 2.2	35 23.5	9.26623	9.3180	3.55	4.78	214 20 55.1	215
4	5 48 30.00	47 55.78	20 40 49.3	40 13.9	9.26867	9.2810	3.54	4.79	215 20 55.6	216
5	5 52 58.03	52 23.72	20 45 11.6	44 39.5	9.27102	9.2396	3.52	4.81	216 20 56.1	217
6	5 57 27.48	56 53.09	20 49 8.5	48 39.7	9.27325	9.1921	3.50	4.81	217 20 56.6	218
7	6 1 58.29	1 23.84	20 52 39.2	52 13.9	9.27539	9.1374	3.49	4.82	218 20 57.2	219
8	6 6 30.42	5 55.91	20 55 43.1	55 21.4	9.27748	9.0731	3.48	4.83	219 20 57.8	220
9	6 11 3.84	10 29.27	20 58 19.6	58 1.5	9.27951	8.9964	3.44	4.84	220 20 58.4	221
10	6 15 38.49	15 3.88	21 0 28.2	0 13.7	9.28139	8.9008	3.42	4.84	221 20 59.0	222
11	6 20 14.29	19 39.68	21 2 8.4	1 57.5	9.28316	8.7756	3.40	4.85	222 20 59.7	223
12	6 24 51.20	24 16.59	21 3 19.7	3 12.5	9.28483	8.5968	3.38	4.85	223 21 0.4	224
13	6 29 29.16	28 54.55	21 4 1.8	3 58.2	9.28645	+8.2810	3.36	4.87	224 21 1.0	225
14	6 34 8.12	33 33.52	21 4 14.2	4 14.3	9.28797	−7.2396	3.32	4.87	225 21 1.7	226
15	6 38 48.03	38 13.46	21 3 56.4	4 0.3	9.28937	8.3602	3.30	4.87	226 21 2.5	227
16	6 43 28.81	42 54.29	21 3 8.0	3 15.7	9.29068	8 6465	3.28	4.87	227 21 3.2	228
17	6 48 10.42	47 35.95	21 1 48.7	2 0.1	9.29193	8.8180	3.23	4.87	228 21 4.0	229
18	6 52 52.81	52 18.39	20 59 58.3	60 13.4	9.29307	8.9420	3.19	4.88	229 21 4.8	230
19	6 57 35.90	57 1.54	20 57 36.5	57 55.4	9.29410	9.0392	3.16	4.88	230 21 5.5	231
20	7 2 19.64	1 45.37	20 54 43.1	55 5.7	9.29507	9.1183	3.12	4.88	231 21 6.3	232
21	7 7 3.98	6 29.81	20 51 18.0	51 44.3	9.29594	9.1860	3.06	4.89	232 21 7.1	233
22	7 11 48.87	11 14.79	20 47 20.9	47 50.9	9.29671	9.2451	3.03	4.89	233 21 7.9	234
23	7 16 34.24	16 0.27	20 42 51.5	43 25.2	9.29741	9.2976	2.99	4.89	234 21 8.8	235
24	7 21 20.05	20 46.20	20 37 49.7	38 27.1	9.29807	9.3439	2.91	4.89	235 21 9.6	236
25	7 26 6.26	25 32.53	20 32 15.6	32 56.6	9.29864	9.3862	2.83	4.89	236 21 10.4	237
26	7 30 52.82	30 19.21	20 26 9.0	26 53.7	9.29911	9.4247	2.76	4.89	237 21 11.2	238
27	7 35 39.67	35 6.20	20 19 29.9	20 18.2	9.29951	9.4600	2.68	4.90	238 21 12.1	239
28	7 40 26.76	39 53.43	20 12 18.3	13 10.1	9.29985	9.4929	2.59	4.90	239 21 12.9	240
29	7 45 14.06	44 40.88	20 4 34.0	5 29.3	9.30013	9.5235	2.46	4.89	240 21 13.8	241
30	7 50 1.52	49 28.49	19 56 17.1	57 15.8	9.30034	9.5518	2.29	4.89	241 21 14.6	242
31	7 54 49.10	54 16.23	+19 47 27.8	48 29.9	+9.30049	−9.5785	+1.68	−4.89	242 21 15.5	243

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Sept. 1	7 59 36.76	59 4.05	+19 38 6.1	39 11.6	+9.30056	−9.6034	+1.38	−4.89	243 21 16.3	244
2	8 4 24.45	3 51.91	19 28 12.1	29 20.9	9.30060	9.6272	−1.68	4.89	244 21 17.2	245
3	8 9 12.15	8 39.79	19 17 45.7	18 57.8	9.30060	9.6497	2.16	4.89	245 21 18.0	246
4	8 13 59.83	13 27.64	19 6 47.0	8 2.5	9.30053	9.6708	2.38	4.89	246 21 18.9	247
5	8 18 47.45	18 15.44	18 55 16.4	56 34.9	9.30040	9.6909	2.53	4.88	247 21 19.7	248
6	8 23 34.96	23 3.14	18 43 14.0	44 35.5	9.30020	9.7098	2.59	4.88	248 21 20.6	249
7	8 28 22.33	27 50.70	18 30 40.1	32 4.7	9.29998	9.7280	2.68	4.87	249 21 21.4	250
8	8 33 9.53	32 38.09	18 17 34.7	19 2.2	9.29970	9.7454	2.76	4.87	250 21 22.3	251
9	8 37 56.53	37 25.27	18 3 58.1	5 28.5	9.29936	9.7618	2.83	4.87	251 21 23.1	252
10	8 42 43.29	42 12.22	17 49 50.8	51 24.0	9.29896	9.7775	2.83	4.87	252 21 23.9	253
11	8 47 29.77	46 58.90	17 35 13.0	36 49.0	9.29854	9.7925	2.89	4.85	253 21 24.8	254
12	8 52 15.96	51 45.29	17 20 5.0	21 43.8	9.29807	9.8068	2.94	4.85	254 21 25.6	255
13	8 57 1.82	56 31.35	17 4 27.1	6 8.6	9.29753	9.8206	2.94	4.85	255 21 26.4	256
14	9 1 47.32	1 17.06	16 48 19.8	50 3.8	9.29699	9.8338	2.99	4.84	256 21 27.3	257
15	9 6 32.45	6 2.39	16 31 43.4	33 29.8	9.29639	9.8464	2.99	4.83	257 21 28.1	258
16	9 11 17.18	10 47.32	16 14 38.4	16 27.2	9.29578	9.8585	3.03	4.82	258 21 28.9	259
17	9 16 1.50	15 31.84	15 57 5.1	58 56.4	9.29513	9.8700	3.05	4.82	259 21 29.7	260
18	9 20 45.38	20 15.91	15 39 4.1	40 57.7	9.29442	9.8810	3.05	4.81	260 21 30.4	261
19	9 25 28.80	24 59.53	15 20 35.9	22 31.7	9.29370	9.8916	3.05	4.81	261 21 31.2	262
20	9 30 11.75	29 42.69	15 1 40.9	3 38.8	9.29300	9.9018	3.06	4.80	262 21 32.0	263
21	9 34 54.23	34 25.38	14 42 19.6	44 19.5	9.29227	9.9115	3.08	4.79	263 21 32.8	264
22	9 39 36.23	39 7.57	14 22 32.6	24 34.5	9.29150	9.9208	3.08	4.78	264 21 33.5	265
23	9 44 17.73	43 49.25	14 2 20.4	4 24.3	9.29072	9.9298	3.08	4.77	265 21 34.2	266
24	9 48 58.72	48 30.44	13 41 43.3	43 49.1	9.28991	9.9384	3.06	4.76	266 21 35.0	267
25	9 53 39.20	53 11.12	13 20 42.0	22 49.5	9.28915	9.9466	3.06	4.75	267 21 35.7	268
26	9 58 19.19	57 51.29	12 59 17.1	61 26.3	9.28839	9.9544	3.06	4.74	268 21 36.4	269
27	10 2 58.69	2 30.98	12 37 29.2	39 40.0	9.28764	9.9621	3.08	4.73	269 21 37.1	270
28	10 7 37.70	7 10.17	12 15 18.7	17 31.1	9.28685	9.9693	3.06	4.70	270 21 37.8	271
29	10 12 16.21	11 48.87	11 52 46.2	55 0.1	9.28609	9.9763	3.05	4.68	271 21 38.5	272
30	10 16 54.24	16 27.08	11 29 52.2	32 7.5	9.28536	9.9830	3.03	4.67	272 21 39.2	273
Oct. 1	10 21 31.81	21 4.83	11 6 37.3	8 53.9	9.28465	9.9894	3.03	4.67	273 21 39.9	274
2	10 26 8.93	25 42.12	10 43 2.1	45 20.0	9.28396	9.9956	3.03	4.66	274 21 40.6	275
3	10 30 45.61	30 18.97	10 19 7.2	21 26.3	9.28325	0.0014	2.99	4.65	275 21 41.3	276
4	10 35 21.85	34 55.38	9 54 53.2	57 13.5	9.28258	0 0071	2.96	4.64	276 21 41.9	277
5	10 39 57.68	39 31.38	9 30 20.7	32 42.1	9.28196	0.0124	2.96	4.62	277 21 42.6	278
6	10 44 33.12	44 6.98	9 5 30.4	7 52.7	9.28134	0.0176	2.94	4.60	278 21 43.2	279
7	10 49 8.17	48 42.19	8 40 22.7	42 45.9	9.28075	0.0224	2.91	4.59	279 21 43.9	280
8	10 53 42.86	53 17.03	8 14 58.4	17 22.5	9.28018	0.0271	2.86	4.56	280 21 44.5	281
9	10 58 17.20	57 51.53	7 49 18.1	51 43.1	9.27967	0.0315	2.86	4.55	281 21 45.2	282
10	11 2 51.23	2 25.71	7 23 22.6	25 48.3	9.27917	0.0356	2.83	4.53	282 21 45.8	283
11	11 7 24.95	6 59.57	6 57 12.5	59 38.8	9.27869	0.0396	2.80	4.51	283 21 46.4	284
12	11 11 58.38	11 33.14	6 30 48.3	33 15.2	9.27826	0.0434	2.78	4.48	284 21 47.0	285
13	11 16 31.55	16 6.45	6 4 10.8	6 38.3	9.27784	0.0469	2.71	4.45	285 21 47.6	286
14	11 21 4.47	20 39.50	5 37 20.7	39 48.7	9.27749	0.0502	2.66	4.43	286 21 48.2	287
15	11 25 37.18	25 12 34	5 10 18.8	12 47.1	9.27717	0.0533	2.64	4.40	287 21 48.8	288
16	11 30 9.70	29 44.99	4 43 5.7	45 34.3	9.27686	0.0561	2.53	4.37	288 21 49.4	289
17	11 34 42.04	34 17.46	4 15 42.2	18 11.0	9.27661	0.0588	2.46	4.34	289 21 50.0	290
18	11 39 14.24	38 49.79	3 48 9.0	50 38.0	9.27640	0.0613	2.29	4.31	290 21 50.6	291
19	11 43 46.32	43 21.99	3 20 26.7	22 55.8	9.27624	0.0636	2.16	4.25	291 21 51.2	292
20	11 48 18.31	47 54.10	2 52 36.0	55 5.1	9.27612	0.0656	−1.68	4.21	292 21 51.8	293
21	11 52 50.24	52 26.15	2 24 37.8	27 6.8	9.27605	0.0675	+1.38	4.16	293 21 52.4	294
22	11 57 22.15	56 58.17	1 56 32.7	59 1.6	9.27606	0.0692	1.68	4.11	294 21 53.0	295
23	12 1 54.07	1 30.20	1 28 21.3	30 50.1	9.27610	0.0707	1.99	4.05	295 21 53.6	296
24	12 6 26.02	6 2.26	1 0 4.4	2 33.0	9.27615	0.0720	2.29	3.99	296 21 54.2	297
25	12 10 58.02	10 34.37	0 31 42.8	34 11.0	9.27623	0.0731	2.53	3.89	297 21 54.8	298
26	12 15 30.10	15 6 56	+ 0 3 17.1	5 44.8	9.27642	0.0741	2.64	3.79	298 21 55.4	299
27	12 20 2.32	19 38.87	− 0 25 11.9	22 44.6	9.27669	0.0748	2.73	3.64	299 21 56 0	300
28	12 24 34.72	24 11.35	0 53 43.5	51 16.6	9.27701	0.0754	2.78	3.46	300 21 56.5	301
29	12 29 7.34	28 44.06	1 22 16.9	19 50.6	9.27737	0.0757	2.80	−3.16	301 21 57.1	302
30	12 33 40.20	33 17.02	1 50 51.5	48 25.9	9.27776	0.0760	2.89	+2.38	302 21 57.7	303
31	12 38 13.33	37 50.25	2 19 26.8	17 1.8	9.27823	0.0761	2.94	3.42	303 21 58.3	304
32	12 42 46.78	42 23.79	− 2 48 2 0	45 37.7	9.27879	−0.0759	+2.96	+3.64	304 21 59.0	305

VENUS, 1857.

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log. Factor t.		Log. Factor t^2.		Mean Solar Time of Meridian Transit.	Sidereal Date of Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
d.	h. m. s.	m. s.	° ′ ″	′ ″					d. h. m.	d.
Nov. 1	12 42 46.78	42 23.79	− 2 48 2.0	45 37.7	+9.27879	−0.0759	+2.96	+3.64	304 21 59.0	305
2	12 47 20.60	46 57.69	3 16 36.1	14 12.8	9.27939	0.0755	3.01	3.76	305 21 59.6	306
3	12 51 54.81	51 31.99	3 45 8.4	42 46.2	9.28003	0.0750	3.04	3.86	306 22 0.3	307
4	12 56 29.44	56 6.71	4 13 38.3	11 17.1	9.28074	0.0743	3.06	3.96	307 22 0.9	308
5	13 1 4.53	0 41.87	4 42 5.1	39 44.8	9.28147	0.0734	3.11	4.05	308 22 1.5	309
6	13 5 40.11	5 17.53	5 10 28.0	8 8.7	9.28228	0.0723	2.15	4.12	309 22 2.1	310
7	13 10 16.23	9 53.73	5 38 46.2	36 28.1	9.28316	0.0710	3.18	4.16	310 22 2.8	311
8	13 14 52.93	14 30.51	6 6 58.9	4 42.2	9.28412	0.0695	3.19	4.22	311 22 3.5	312
9	13 19 30.25	19 7.91	6 35 5.5	32 50.1	9.28511	0.0679	3.20	4.26	312 22 4.1	313
10	13 24 8.21	23 45.95	7 3 5.2	0 51.1	9.28614	0.0660	3.22	4.32	313 22 4.8	314
11	13 28 46.84	28 24.66	7 30 57.1	28 44.4	9.28719	0.0638	3.24	4.36	314 22 5.5	315
12	13 33 26.16	33 4.06	7 58 40.3	56 29.2	9.28829	0.0615	3.26	4.40	315 22 6.2	316
13	13 38 6.21	37 44.20	8 26 14.1	24 4.7	9.28945	0.0589	3.29	4.42	316 22 7.0	317
14	13 42 47.03	42 25.10	8 53 37.7	51 30.0	9.29067	0.0561	3.30	4.45	317 22 7.7	318
15	13 47 28.65	47 6.81	9 20 50.4	18 44.4	9.29194	0.0531	3.30	4.48	318 22 8.5	319
16	13 52 11.10	51 49.35	9 47 51.3	45 47.1	9.29320	0.0498	3.32	4.51	319 22 9.3	320
17	13 56 54.38	56 32.73	10 14 39.5	12 37.2	9.29449	0.0463	3.35	4.54	320 22 10.1	321
18	14 1 38.53	1 16.98	10 41 14.3	39 13.9	9.29587	0.0425	3.36	4.56	321 22 10.9	322
19	14 6 23.60	6 2.13	11 7 34.9	5 36.5	9.29729	0.0385	3.37	4.58	322 22 11.7	323
20	14 11 9.61	10 48.22	11 33 40.5	31 44.1	9.29873	0.0342	3.37	4.60	323 22 12.5	324
21	14 15 56.58	15 35.28	11 59 30.2	57 35.9	9.30020	0.0297	3.38	4.62	324 22 13.3	325
22	14 20 44.53	20 23.32	12 25 3.3	23 11.1	9.30168	0.0249	3.39	4.64	325 22 14.1	326
23	14 25 33.47	25 12.36	12 50 19.0	48 29.0	9.30319	0.0198	3.41	4.66	326 22 15.0	327
24	14 30 23.43	30 2.43	13 15 16.5	13 28.8	9.30477	0.0144	3.42	4.67	327 22 15.9	328
25	14 35 14.46	34 53.57	13 39 55.0	38 9.7	9.30638	0.0087	3.42	4.70	328 22 16.8	329
26	14 40 6.58	39 45.80	14 4 13.7	2 30.8	9.30802	0.0026	3.42	4.71	329 22 17.8	330
27	14 44 59.80	44 39.13	14 28 11.8	26 31.4	9.30963	9.9963	3.43	4.73	330 22 18.7	331
28	14 49 54.12	49 33.58	14 51 48.6	50 10.6	9.31127	9.9897	3.44	4.74	331 22 19.7	332
29	14 54 49.56	54 29.14	15 15 3.3	13 27.7	9.31294	9.9827	3.45	4.76	332 22 20.6	333
30	14 59 46.15	59 25.84	15 37 55.1	36 22.0	9.31466	9.9753	3.45	4.77	333 22 21.6	334
Dec. 1	15 4 43.92	4 23.73	15 60 23.2	58 52.7	9.31638	9.9675	3.45	4.79	334 22 22.6	335
2	15 9 42.87	9 22.83	16 22 26.7	20 58.9	9.31809	9.9593	3.45	4.81	335 22 23.7	336
3	15 14 43.00	14 23.12	16 44 4.8	42 39.8	9.31980	9.9507	3.46	4.81	336 22 24.7	337
4	15 19 44.32	19 24.59	17 5 16.9	3 54.6	9.32153	9.9417	3.47	4.82	337 22 25.8	338
5	15 24 46.85	24 27.28	17 26 2.2	24 42.5	9.32328	9.9322	3.46	4.84	338 22 26.9	339
6	15 29 50.59	29 31.15	17 46 19.9	45 2.9	9.32501	9.9222	3.45	4.85	339 22 28.0	340
7	15 34 55.53	34 36.25	18 6 9.2	4 55.0	9.32670	9.9117	3.46	4.87	340 22 29.2	341
8	15 40 1.66	39 42.55	18 25 29.3	24 17.9	9.32841	9.9006	3.46	4.87	341 22 30.3	342
9	15 45 9.00	44 50.07	18 44 19.4	43 10.8	9.33014	9.8889	3.44	4.87	342 22 31.5	343
10	15 50 17.55	49 58.80	19 2 38.8	1 33.0	9.33182	9.8767	3.44	4.89	343 22 32.7	344
11	15 55 27.27	55 8.72	19 20 26.9	19 23.9	9.33344	9.8638	3.44	4.90	344 22 33.9	345
12	16 0 38.14	0 19.80	19 37 42.9	36 42.8	9.33504	9.8502	3.44	4.91	345 22 35.2	346
13	16 5 50.16	5 32.03	19 54 26.0	53 28.8	9.33666	9.8358	3.42	4.92	346 22 36.5	347
14	16 11 3.33	10 45.41	20 10 35.4	9 41.0	9.33822	9.8205	3.41	4.93	347 22 37.8	348
15	16 16 17.61	15 59.92	20 26 10.4	25 18.8	9.33972	9.8044	3.40	4.94	348 22 39.1	349
16	16 21 32.96	21 15.50	20 41 10.5	40 21.7	9.34116	9.7874	3.40	4.94	349 22 40.4	350
17	16 26 49.35	26 32.12	20 55 35.0	54 49.0	9.34260	9.7694	3.38	4.95	350 22 41.7	351
18	16 32 6.78	31 49.78	21 9 23.4	8 40.0	9.34402	9.7503	3.36	4.96	351 22 43.0	352
19	16 37 25.22	37 8.46	21 22 35.0	21 54.3	9.34535	9.7298	3.35	4.97	352 22 44.4	353
20	16 42 44.61	42 28.12	21 35 9.1	34 31.2	9.34661	9.7081	3.33	4.97	353 22 45.8	354
21	16 48 4.92	47 48.70	21 47 5.3	46 30.0	9.34784	9.6849	3.31	4.98	354 22 47.2	355
22	16 53 26.12	53 10.17	21 58 22.9	57 50.2	9.34901	9.6600	3.29	4.98	355 22 48.6	356
23	16 58 48.16	58 32.48	22 9 1.4	8 31.3	9.35012	9.6332	3.26	4.99	356 22 50.0	357
24	17 4 10.99	3 55.59	22 19 0.3	18 32.7	9.35117	9.6044	3.24	4.99	357 22 51.4	358
25	17 9 34.59	9 19.48	22 28 19.2	27 54.0	9.35217	9.5731	3.20	4.99	358 22 52.9	359
26	17 14 58.91	14 44.10	22 36 57.7	36 34.9	9.35310	9.5391	3.16	5.00	359 22 54.3	360
27	17 20 23.89	20 9.39	22 44 55.5	44 35.0	9.35394	9.5020	3.13	5.00	360 22 55.8	361
28	17 25 49.48	25 35.29	22 52 12.2	51 53.9	9.35471	9.4608	3.10	5.01	361 22 57.3	362
29	17 31 15.63	31 1.76	22 58 47.2	58 31.2	9.35542	9.4144	3.08	5.01	362 22 58.8	363
30	17 36 42.30	36 28.76	23 4 40.0	4 26.3	9.35609	9.3623	3.08	5.01	363 23 0.3	364
31	17 42 9.48	41 56.25	−23 9 50.5	9 38.6	+9.35671	−9.3042	+3.07	+5.01	364 23 1.8	365

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Jan. 1 2 45.0	1	21 30 59.57	30 40.45	−15 54 26.1	56 1.7	+9.10738	+9.8066	−3.04	+4.32
2 2 44.2	2	21 34 3.73	33 45.05	15 38 59.2	40 33.8	9.10628	9.8107	3.04	4.32
3 2 43.4	3	21 37 7.43	36 49.19	15 23 23.4	24 56.9	9.10519	9.8148	3.04	4.31
4 2 42.5	4	21 40 10.67	39 52.86	15 7 38.7	9 11.1	9.10410	9.8188	3.04	4.31
5 2 41.6	5	21 43 13.45	42 56.07	14 51 45.4	53 16.6	9.10302	9.8227	3.04	4.30
6 2 40.7	6	21 46 15.77	45 58.82	14 35 43.8	37 13.7	9.10195	9.8265	3.04	4.29
7 2 39.8	7	21 49 17.65	49 1.13	14 19 33.7	21 2.3	9.10088	9.8302	3.03	4.28
8 2 38.9	8	21 52 19.09	52 2.98	14 3 15.4	4 42.7	9.09982	9.8338	3.03	4.26
9 2 38.0	9	21 55 20.07	55 4.39	13 46 49.1	48 15.0	9.09877	9.8373	3.02	4.25
10 2 37 1	10	21 58 20.63	58 5.37	13 30 15.1	31 39.6	9.09772	9.8407	3.01	4.23
11 2 36.1	11	22 1 20.75	1 5.90	13 13 33.5	14 56.5	9.09668	9.8439	3.00	4.22
12 2 35.2	12	22 4 20.44	4 6.00	12 56 44.5	58 5.9	9.09565	9.8470	2.99	4.21
13 2 34.2	13	22 7 19.72	7 5.68	12 39 48.5	41 8.3	9.09463	9.8500	2.99	4.19
14 2 33.3	14	22 10 18.59	10 4.95	12 22 45.6	24 3.8	9.09363	9.8529	2.98	4.18
15 2 32.3	15	22 13 17.04	13 3.80	12 5 35.9	6 52.4	9.09264	9.8557	2.98	4.17
16 2 31.3	16	22 16 15.08	16 2.24	11 48 19.7	49 34.5	9.09167	9.8584	2.97	4.16
17 2 30.4	17	22 19 12.72	19 0.28	11 30 57.1	32 10.2	9.09071	9.8610	2.97	4.15
18 2 29.4	18	22 22 9.97	21 57.92	11 13 28.4	14 39.8	9.08977	9.8635	2.96	4.13
19 2 28.4	19	22 25 6.84	24 55.18	10 55 53.7	57 3.4	9.08884	9.8659	2.95	4.12
20 2 27.4	20	22 28 3.32	27 52.04	10 38 13.2	39 21.2	9.08792	9.8682	2.94	4.10
21 2 26.4	21	22 30 59.44	30 48.54	10 20 27.2	21 33.4	9.08701	9.8705	2.94	4.08
22 2 25.4	22	22 33 55.20	33 44.68	10 2 35.9	3 40.3	9.08610	9.8726	2.93	4.06
23 2 24.4	23	22 36 50.60	36 40.46	9 44 39.6	45 42.1	9.08520	9.8746	2.93	4.03
24 2 23.4	24	22 39 45.62	39 35.85	9 26 38.5	27 39.1	9.08430	9.8765	2.92	4.01
25 2 22.4	25	22 42 40.28	42 30.89	9 8 32.6	9 31.2	9.08341	9.8783	2.92	3.98
26 2 21.3	26	22 45 34.59	45 25.57	8 50 22.4	51 19.0	9.08254	9.8800	2.91	3.96
27 2 20.3	27	22 48 28.56	48 19.91	8 32 7.7	33 2.3	9.08168	9.8816	2.90	3.94
28 2 19.2	28	22 51 22.19	51 13.91	8 13 49.2	14 41.8	9.08084	9.8831	2.90	3.92
29 2 18.2	29	22 54 15.50	54 7.59	7 55 26.8	56 17.3	9.08002	9.8846	2.89	3.90
30 2 17.2	30	22 57 8.47	57 0.92	7 37 0.9	37 49.3	9.07922	9.8860	2.89	3.88
31 2 16.1	31	22 60 1.13	59 53.94	7 18 31.5	19 17.8	9.07043	9.8873	2.87	3.86
Feb. 1 2 15.1	32	23 2 53.47	2 46.64	6 59 58.9	60 43.1	9.07765	9.8885	2.87	3 81
2 2 14.0	33	23 5 45.50	5 39.02	6 41 23.3	42 5.4	9.07688	9.8896	2.87	3.76
3 2 12.9	34	23 8 37.22	8 31.09	6 22 44.9	23 24.9	9.07612	9.8907	2.86	3.71
4 2 11.8	35	23 11 28.65	11 22.87	6 4 3.9	4 41.8	9.07537	9.8917	2.86	3.76
5 2 10.7	36	23 14 19.78	14 14.35	5 45 20.5	45 56.2	9.07464	9.8926	2.86	3.61
6 2 9.6	37	23 17 10.65	17 5.56	5 26 34.9	27 8.5	9.07393	9.8934	2.85	3.57
7 2 8.5	38	23 20 1.22	19 56.47	5 7 47.6	8 19.0	9.07325	9.8941	2.84	3.53
8 2 7.4	39	23 22 51.55	22 47.13	4 48 58.5	49 27.7	9.07258	9.8947	2.84	3.49
9 2 6.3	40	23 25 41.60	25 37.53	4 30 7.8	30 34.8	9.07193	9.8953	2.83	3.45
10 2 5.2	41	23 28 31.42	28 27.69	4 11 15.7	11 40.5	9.07131	9.8958	2.72	3.42
11 2 4.1	42	23 31 20.99	31 17.60	3 52 22.3	52 44.9	9.07072	9.8963	2.70	3.33
12 2 3.0	43	23 34 10.34	34 7.29	3 33 27.8	33 48.2	9.07016	9.8967	2.67	3.28
13 2 1.9	44	23 36 59.47	36 56.76	3 14 32.4	14 50.6	9.06962	9.8970	2.63	+3.00
14 2 0.8	45	23 39 48.38	39 46.01	2 55 36.2	55 52.2	9.06911	9.8972	2.61	
15 1 59.7	46	23 42 37.11	42 35.07	2 36 39.5	36 53.2	9.06863	9.8974	2.58	
16 1 58.6	47	23 45 25.68	45 23.97	2 17 42.2	17 53.7	9.06817	9.8975	2.57	
17 1 57.4	48	23 48 14.09	48 12.71	1 58 44.8	58 54.1	9.06772	9.8976	2.56	
18 1 56.3	49	23 51 2.33	51 1.28	1 39 47.1	39 54.2	9.06728	9.8976	2.55	
19 1 55.2	50	23 53 50.37	53 49.65	1 20 49.7	20 54.6	9.06686	9.8975	2.54	
20 1 54.0	51	23 56 38.25	56 37.86	1 1 52.6	1 55.3	9.06646	9.8973	2.53	−3.11
21 1 52.9	52	23 59 25.99	59 25.93	0 42 56.0	42 56.5	9.06609	9.8971	2.51	3.25
22 1 51.8	53	0 2 13.59	2 13.86	0 24 0.0	23 58.3	9.06575	9.8968	2.49	3.38
23 1 50.6	54	0 5 1.04	5 1.63	− 0 5 5.1	5 1.2	9.06543	9.8964	2.47	3.50
24 1 49.5	55	0 7 48.39	7 49.30	+ 0 13 48.7	13 54.8	9.06512	9.8959	2.44	3.61
25 1 48.3	56	0 10 35.62	10 36.85	0 32 41.1	32 49.4	9.06483	9.8953	2.42	3.66
26 1 47.2	57	0 13 22.75	13 24.30	0 51 32.0	51 42.5	9.06455	9.8947	2.37	3.68
27 1 46.0	58	0 16 9.77	16 11.65	1 10 21.1	10 33.8	9.06428	9.8940	2.32	3.70
28 1 44.9	59	0 18 56.70	18 58.90	1 29 8.5	29 23.4	9.06402	9.8933	2.27	3.72
29 1 43.7	60	0 21 43.53	21 46.05	1 47 53.7	48 10.7	9.06377	9.8925	2.22	3.74
30 1 42.5	61	0 24 30.25	24 33.09	2 6 36.7	6 55.8	9.06353	9.8916	2.16	3.76
31 1 41.3	62	0 27 16.89	27 20.05	+ 2 25 17.3	25 38.5	+9.06332	+9.8907	−2.13	−3.80

NOTE.—The transits to February 21, inclusive, occur upon the Sidereal Date preceding the one for which they are given.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Side-real Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Mar. 1 1 43.7	60	0 21 43.53	21 46.05	+ 1 47 53.7	48 10.7	+9.06377	+9.8925	−2 22	−3.74
2 1 42.5	61	0 24 30.25	24 33.09	2 6 36.7	6 55.8	9.06353	9.8916	2.16	3.76
3 1 41.4	62	0 27 16.89	27 20.05	2 25 17.3	25 38.5	9.06332	9.8907	2.13	3.80
4 1 40.2	63	0 30 3.47	30 6.95	2 43 55.5	44 18.8	9.06314	9.8897	2.10	3.83
5 1 39.0	64	0 32 49.99	32 53.79	3 2 30.8	2 56.2	9.06299	9.8886	−2.08	3.86
6 1 37.9	65	0 35 36.45	35 40.57	3 21 3.4	21 30.9	9.06287	9.8874		3.89
7 1 36.7	66	0 38 22.86	38 27.30	3 39 32.9	40 2.5	9.06279	9.8862		3.91
8 1 35.5	67	0 41 9.25	41 14.01	3 57 59.3	58 30.9	9.06272	9.8849		3.93
9 1 34.4	68	0 43 55.60	44 0.68	4 16 22.3	16 55.9	9.06266	9.8835		3.94
10 1 33.2	69	0 46 41.94	46 47.34	4 34 41.9	35 17.5	9.06262	9.8821		3.95
11 1 32.1	70	0 49 28.25	49 33.97	4 52 57.8	53 35.4	9.06259	9.8806		3.96
12 1 30.9	71	0 52 14.57	52 20.62	5 11 10.0	11 49.6	9.06258	9.8791		3.97
13 1 29.7	72	0 55 0.89	55 7.26	5 29 18.1	29 59.6	9.06260	9.8775		3.99
14 1 28.6	73	0 57 47.23	57 53.92	5 47 22.3	48 5.7	9.06264	9.8758		4.01
15 1 27.4	74	1 0 33.57	0 40.58	6 5 22.0	6 7.3	9.06270	9.8741		4.03
16 1 26.3	75	1 3 19.96	3 27.29	6 23 17.4	24 4.6	9.06278	9.8723		4.05
17 1 25.1	76	1 6 6.37	6 14.02	6 41 8.3	41 57.4	9.06288	9.8704	+2.08	4.07
18 1 23.9	77	1 8 52.83	9 0.80	6 58 54.4	59 45.3	9.06300	9.8685	2.13	4.09
19 1 22.8	78	1 11 39.34	11 47.63	7 16 35.6	17 28.3	9.06314	9.8665	2.17	4.11
20 1 21.6	79	1 14 25.92	14 34.54	7 34 11.8	35 6.3	9.06331	9.8644	2.22	4.12
21 1 20.5	80	1 17 12.56	17 21.51	7 51 42.7	52 39.0	9.06350	9.8622	2.27	4.13
22 1 19.3	81	1 19 59.28	20 8.56	8 9 8.5	10 6.5	9.06372	9.8599	2.33	4.14
23 1 18.2	82	1 22 46.07	22 55.68	8 26 28.8	27 28.5	9.06395	9.8576	2.34	4.15
24 1 17.0	83	1 25 32.95	25 42.88	8 43 43.4	44 44.8	9.06418	9.8552	2.35	4.16
25 1 15.9	84	1 28 19.91	28 30.17	9 0 52.4	1 55.4	9.06442	9.8528	2.36	4.17
26 1 14.7	85	1 31 6.98	31 17.57	9 17 55.6	19 0.2	9.06466	9.8503	2.37	4.18
27 1 13.6	86	1 33 54.14	34 5.06	9 34 52.6	35 58.8	9.06491	9.8477	2.38	4.19
28 1 12.5	87	1 36 41.40	36 52.65	9 51 43.5	52 51.3	9.06517	9.8450	2.41	4.20
29 1 11.3	88	1 39 28.76	39 40.34	10 8 27.9	9 37.2	9.06545	9.8422	2.44	4.21
30 1 10.2	89	1 42 16.24	42 28.15	10 25 5.8	26 16.6	9.06574	9.8393	2.46	4.22
31 1 9.0	90	1 45 3.83	45 16.08	10 41 37.0	42 49.2	9.06604	9.8363	2.48	4.23
Apr. 1 1 7.9	91	1 47 51.54	48 4.13	10 58 1.4	59 15.0	9.06635	9.8333	2.50	4.23
2 1 6.8	92	1 50 39.37	50 52.29	11 14 18.8	15 33.8	9.06667	9.8302	2.50	4.24
3 1 5.6	93	1 53 27.33	53 40.59	11 30 29.1	31 45.5	9.06700	9.8269	2.50	4.24
4 1 4.5	94	1 56 15.43	56 29.03	11 46 32.0	47 49.7	9.06734	9.8236	2.52	4.24
5 1 3.3	95	1 59 3.66	59 17.60	12 2 27.6	3 46.5	9.06770	9.8202	2.54	4.25
6 1 2.2	96	2 1 52.02	2 6.30	12 18 15.8	19 35.9	9.06807	9.8167	2.56	4.26
7 1 1.0	97	2 4 40.53	4 55.15	12 33 56.2	35 17.5	9.06846	9.8132	2.58	4.27
8 0 59.9	98	2 7 29.20	7 44.16	12 49 28.8	50 51.2	9.06886	9.8096	2.61	4.28
9 0 58.8	99	2 10 18.02	10 33.33	13 4 53.7	6 17.2	9.06927	9.8059	2.62	4.28
10 0 57.7	100	2 13 7.01	13 22.67	13 20 10.7	21 35.3	9.06969	9.8021	2.63	4.29
11 0 56.6	101	2 15 56.16	16 12.17	13 35 19.5	36 45.1	9.07012	9.7982	2.64	4.29
12 0 55.5	102	2 18 45.47	19 1.83	13 50 20.3	51 46.9	9.07057	9.7942	2.65	4.30
13 0 54.4	103	2 21 34.97	21 51.68	14 5 12.5	6 40.0	9.07102	9.7901	2.66	4.31
14 0 53.3	104	2 24 24.64	24 41.70	14 19 56.2	21 24.6	9.07148	9.7859	2.66	4.31
15 0 52.2	105	2 27 14.50	27 31.91	14 34 31.4	36 0.6	9.07195	9.7816	2.66	4.32
16 0 51.1	106	2 30 4.54	30 22.31	14 48 58.0	50 28.0	9.07242	9.7772	2.66	4.32
17 0 50.0	107	2 32 54.76	33 12.88	15 3 15.8	4 46.6	9.07290	9.7727	2.66	4.33
18 0 48.9	108	2 35 45.17	36 3.65	15 17 24.7	18 56.2	9.07338	9.7681	2.66	4.34
19 0 47.8	109	2 38 35.77	38 54.61	15 31 24.5	32 56.7	9.07387	9.7634	2.66	4.34
20 0 46.8	110	2 41 26.56	41 45.76	15 45 15.1	46 47.9	9.07436	9.7586	2.67	4.35
21 0 45.7	111	2 44 17.55	44 37.11	15 58 56.4	0 29.7	9.07486	9.7537	2.67	4.35
22 0 44.7	112	2 47 8.74	47 28.66	16 12 28.4	14 2.2	9.07536	9.7486	2.68	4.36
23 0 43.6	113	2 50 0.14	50 20.43	16 25 50.9	27 25.2	9.07586	9.7434	2.68	4.36
24 0 42.5	114	2 52 51.72	53 12.38	16 39 3.7	40 38.4	9.07637	9.7381	2.68	4.37
25 0 41.4	115	2 55 43.50	56 4.53	16 52 6.9	53 42.0	9.07688	9.7327	2.68	4.37
26 0 40.3	116	2 58 35.48	58 56.88	17 5 0.2	6 35.6	9.07738	9.7271	2.68	4.38
27 0 39.2	117	3 1 27.67	1 49.43	17 17 43.4	19 19.1	9.07788	9.7213	2.68	4.39
28 0 38.2	118	3 4 20.06	4 42.19	17 30 16.5	31 52.4	9.07837	9.7154	2.68	4.40
29 0 37.1	119	3 7 12.63	7 35.13	17 42 39.4	44 15.4	9.07885	9.7094	2.67	4.40
30 0 36.0	120	3 10 5.40	10 28.27	17 54 51.9	56 28.0	9.07933	9.7033	2.66	4.41
31 0 35.0	121	3 12 58.35	13 21.59	+18 6 53.9	8 30.0	+9.07980	+9.6970	+2.65	−4.41

MARS, 1857.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
May 1 0 35.0	121	3 12 58.35	13 21.59	+18 6 53.9	8 30.0	+9.07980	+9.6970	+2.65	−4.41
2 0 34.0	122	3 15 51.49	16 15 10	18 18 45.5	20 21.6	9.08026	9.6905	2.64	4.42
3 0 32.9	123	3 18 44.82	19 8.80	18 30 26.4	32 2.5	9.08071	9.6839	2.63	4.42
4 0 31.9	124	3 21 38.31	22 2 66	18 41 56.6	43 32.6	9.08116	9.6771	2.63	4.42
5 0 30.8	125	3 24 31.98	24 56.71	18 53 15.9	54 51.7	9.08160	9.6702	2.62	4.42
6 0 29.8	126	3 27 25.83	27 50.94	19 4 24.4	6 0.0	9.08204	9.6631	2.62	4.42
7 0 28.7	127	3 30 19.86	30 45.35	19 15 21.9	16 57.3	9.08248	9.6559	2.61	4.42
8 0 27.7	128	3 33 14.06	33 39.93	19 26 8.6	27 43.7	9.08292	9 6485	2.61	4.42
9 0 26 6	129	3 36 8.45	36 34.70	19 36 44.4	38 19.1	9.08336	9.6410	2.61	4.42
10 0 25.6	130	3 39 3.00	39 29.63	19 47 9.2	48 43.5	9.08379	9.6333	2.61	4.43
11 0 24.6	131	3 41 57.72	42 24 72	19 57 22.8	58 56.6	9.08421	9.6254	2.61	4.43
12 0 23.6	132	3 44 52.62	45 20.00	20 7 24.9	8 58.2	9.08462	9.6172	2.61	4.44
13 0 22.6	133	3 47 47.68	48 15.44	20 17 15.4	18 48.1	9.08503	9.6088	2.60	4.44
14 0 21.6	134	3 50 42.89	51 11 03	20 26 54.5	28 26.5	9.08543	9.6001	2.59	4.44
15 0 20.6	135	3 53 38.27	54 6.79	20 36 22.0	37 53.2	9.08583	9.5911	2.57	4.45
16 0 19.6	136	3 56 33.81	57 2.72	20 45 37.8	47 8.2	9.08623	9 5819	2.55	4.45
17 0 18.6	137	3 59 29.52	59 58.81	20 54 41.7	56 11.3	9.08662	9.5726	2.53	4.46
18 0 17.6	138	4 2 25.39	2 55.07	21 3 33.9	5 2.6	9.08700	9.5630	2.50	4.46
19 0 16.6	139	4 5 21.43	5 51.50	21 12 14.3	13 42.0	9.08738	9.5531	2.48	4.46
20 0 15.6	140	4 8 17.60	8 48.06	21 20 42.8	22 9.5	9.08775	9.5429	2.45	4.47
21 0 14.6	141	4 11 13.93	11 44.77	21 28 59.4	30 25.0	9.08811	9.5324	2.43	4.47
22 0 13.6	142	4 14 10.46	14 41.69	21 37 4 1	38 28.6	9.08845	9.5215	2.40	4.47
23 0 12.6	143	4 17 7.12	17 38.74	21 44 56.7	46 20.0	9.08877	9.5103	2.38	4.47
24 0 11.6	144	4 20 3.87	20 35.87	21 52 37.1	53 59.1	9.08907	9.4988	2.32	4.47
25 0 10.6	145	4 23 0.73	23 33.11	22 0 5.3	1 26.0	9.08934	9.4870	2.26	4.47
26 0 9.6	146	4 25 57.68	26 30.44	22 7 21.2	8 40.5	9.08959	9.4748	2.20	4.47
27 0 8.6	147	4 28 54.71	29 27.85	22 14 24 8	15 42.7	9.08982	9.4622	2.14	4.47
28 0 7.6	148	4 31 51.83	32 25.35	22 21 16.0	22 32.4	9.09003	9.4492	+2.08	4.47
29 0 6.7	149	4 34 49.03	35 22.93	22 27 54.7	29 9.6	9.09022	9.4356		4.47
30 0 5.7	150	4 37 46.31	38 20.59	22 34 21.0	35 34.3	9.09038	9.4216		4.47
31 0 4.7	151	4 40 43.64	41 18.29	22 40 34.9	41 46.5	9.09052	9.4070		4.48
June 1 0 3.8	152	4 43 41.05	44 16.08	22 46 36.2	47 46.0	9.09065	9.3919		4.48
2 0 2.8	153	4 46 38.51	47 13.91	22 52 25.0	53 33.0	9.09077	9 3762		4.48
3 0 1.8	154	4 49 36.00	50 11.78	22 58 1.3	59 7.4	9.09088	9.3600		4.48
4 0 0.8	155	4 52 33.54	53 9.69	23 3 25.0	4 29.2	9.09098	9.3432		4.48
4 23 59.9	156	4 55 31.11	56 7.63	23 8 36.0	9 38.2	9.09106	9.3256		4.48
5 23 58.9	157	4 58 28.72	59 5.61	23 13 34.6	14 34.8	9.09112	9.3072		4.48
6 23 58.0	158	5 1 26.35	2 3.61	23 18 20.6	19 18 8	9.09116	9.2879		4.48
7 23 57.0	159	5 4 23.99	5 1.62	23 22 53.8	23 49.9	9.09118	9.2677		4.48
8 23 56.0	160	5 7 21.63	7 59.63	23 27 14.4	28 8.4	9.09118	9.2467		4.48
9 23 55.0	161	5 10 19.28	10 57.64	23 31 22.2	32 14.0	9.09116	9.2245		4.48
10 23 54.0	162	5 13 16.89	13 55.61	23 35 17.4	36 6.9	9.09114	9.2012		4.48
11 23 53.0	163	5 16 14.50	16 53.58	23 39 0.0	39 47.2	9.09110	9.1766		4.48
12 23 52.1	164	5 19 12.12	19 51.56	23 42 29.9	43 14.7	9.09105	9.1504		4.48
13 23 51.1	165	5 22 9.70	22 49.50	23 45 47.1	46 29.5	9.09098	9.1224	−2.08	4.48
14 23 50.1	166	5 25 7.24	25 47.40	23 48 51.5	49 31.5	9.09089	9.0926	2.15	4.48
15 23 49.1	167	5 28 4.74	28 45.25	23 51 43.3	52 20.8	9.09077	9.0610	2.22	4.48
16 23 48.1	168	5 31 2.20	31 43.06	23 54 22.3	54 57.2	9.09063	9.0270	2.28	4.48
17 23 47.2	169	5 33 59.59	34 40.80	23 56 48.6	57 20.9	9.09047	8.9898	2 32	4.48
18 23 46.2	170	5 36 56.91	37 38.47	23 59 2.3	59 31.9	9.09029	8.9482	2.37	4.48
19 23 45.2	171	5 39 54.15	40 36.06	24 1 3.3	1 30.1	9.09009	8.9012	2.42	4.48
20 23 44.2	172	5 42 51.30	43 33.56	24 2 51.7	3 15.7	9.08986	8.8486	2.46	4.48
21 23 43.2	173	5 45 48.34	46 30.94	24 4 27.4	4 48.5	9.08960	8.7886	2.50	4.48
22 23 42.3	174	5 48 45.27	49 28.20	24 5 50.5	6 8.7	9.08930	8.7202	2.53	4.48
23 23 41.3	175	5 51 42.07	52 25.33	24 7 0.9	7 16.2	9.08897	8.6425	2.55	4.48
24 23 40.3	176	5 54 38.74	55 22.32	24 7 58.7	8 11.0	9.08861	8.5543	2.57	4.47
25 23 39.3	177	5 57 35.25	58 19.16	24 8 44.1	8 53.4	9.08823	8.4338	2.59	4.47
26 23 38.3	178	6 0 31 63	1 15.85	24 9 16.9	9 23.2	9.08783	8.2665	2.61	4.47
27 23 37.3	179	6 3 27.84	4 12.38	24 9 37.3	9 40.5	9.08741	7.9939	2.62	4.47
28 23 36.3	180	6 6 23.88	7 8.73	24 9 45.3	9 45.3	9.08698	+7.0969	2.64	4.47
29 23 35.3	181	6 9 19.72	10 4.88	24 9 40.9	9 37.8	9.08653	−7.8669	2.66	4.47
30 23 34.3	182	6 12 15.37	13 0.83	+24 9 24.1	9 17.9	+9.08606	−8.2015	−2.68	−4.47

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
July 1 23 34.3	183	6 12 15.37	13 0 83	+24 9 24.1	9 17.9	+9.08606	−8.2015	−2.68	−4.47
2 23 33.3	184	6 15 10.82	15 56.58	24 8 55.1	8 45.7	9.08557	8.3876	2.70	4.47
3 23 32.3	185	6 18 6.08	18 52.14	24 8 13.8	8 1.1	9.08507	8.5174	2.71	4.47
4 23 31.3	186	6 21 1.13	21 47.49	24 7 20.3	7 4.2	9.08455	8.6165	2.72	4.47
5 23 30.2	187	6 23 55.97	24 42.63	24 6 14.7	5 55.1	9.08401	8.6969	2.73	4.46
6 23 29.2	188	6 26 50.59	27 37.55	24 4 57.0	4 34.0	9.08345	8.7644	2.75	4.46
7 23 28.1	189	6 29 44.99	30 32 24	24 3 27.3	3 0.9	9.08288	8.8225	2.76	4.46
8 23 27.1	190	6 32 39.16	33 26.69	24 1 45.6	1 15.8	9.08229	8.8734	2.78	4.46
9 23 26.1	191	6 35 33.10	36 20.92	23 59 52.1	59 18.8	9.08169	8.9189	2.79	4.45
10 23 25.1	192	6 38 26.78	39 14.89	23 57 46.7	57 9.9	9.08107	8.9601	2.81	4.45
11 23 24.0	193	6 41 20.20	42 8.59	23 55 29.4	54 49.0	9.08043	8.9976	2.81	4.45
12 23 23.0	194	6 44 13.35	45 2.01	23 53 0.3	52 16.3	9.07977	9.0323	2.81	4.45
13 23 21.9	195	6 47 6.22	47 55.15	23 50 19.2	49 31.6	9.07909	9.0640	2.82	4.44
14 23 20.9	196	6 49 58.82	50 48.02	23 47 26.5	46 35.2	9.07839	9.0927	2.82	4.44
15 23 19.8	197	6 52 51.16	53 40.62	23 44 22.6	43 27.6	9.07766	9.1198	2.82	4.44
16 23 18.8	198	6 55 43.20	56 32.92	23 41 7.0	40 8.3	9.07691	9.1454	2.83	4.44
17 23 17.7	199	6 58 34.96	59 24.93	23 37 40.0	36 37.6	9.07615	9.1694	2.85	4.43
18 23 16.6	200	7 1 26.41	2 16.63	23 34 1.6	32 55.5	9.07537	9.1919	2.86	4.43
19 23 15.5	201	7 4 17.53	5 8.00	23 30 12.0	29 2.1	9.07457	9.2130	2.87	4.42
20 23 14.4	202	7 7 8.35	7 59.06	23 26 11.2	24 57.5	9.07376	9.2329	2.89	4.42
21 23 13.3	203	7 9 58.84	10 49.76	23 21 59.5	20 42.0	9.07293	9.2518	2.90	4.42
22 23 12.2	204	7 12 49.00	13 40.19	23 17 36.8	16 15.5	9.07208	9.2699	2.92	4.41
23 23 11.1	205	7 15 38.83	16 30.25	23 13 3.1	11 38.0	9.07121	9.2872	2.93	4.41
24 23 10.0	206	7 18 28.30	19 19.95	23 8 18.6	6 49.7	9.07032	9.3037	2.94	4.40
25 23 8.9	207	7 21 17.43	22 9.30	23 3 23.4	1 50.6	9.06940	9.3195	2.95	4.40
26 23 7.8	208	7 24 6.20	24 58.29	22 58 17.6	56 41.0	9.06847	9.3346	2.95	4.40
27 23 6.6	209	7 26 54.60	27 46.90	22 53 1.1	51 20.6	9.06752	9.3491	2.95	4.39
28 23 5.5	210	7 29 42.62	30 35.13	22 47 34.1	45 49.7	9.06655	9.3630	2.96	4.39
29 23 4.3	211	7 32 30.26	33 22.97	22 41 56.7	40 8.4	9.06557	9.3764	2.96	4.38
30 23 3.2	212	7 35 17.54	36 10.45	22 36 9.1	34 16.9	9.06458	9.3890	2.96	4.38
31 23 2.0	213	7 38 4.43	38 57.54	22 30 11.3	28 15.2	9.06358	9.4012	2.97	4.38
Aug. 1 23 0.9	214	7 40 50.94	41 44.25	22 24 3.5	22 3.5	9.06257	9.4130	2.97	4.37
2 22 59.7	215	7 43 37.05	44 30.56	22 17 45.7	15 41.8	9.06156	9.4244	2.98	4.37
3 22 58.6	216	7 46 22.76	47 16.46	22 11 18.1	9 10.3	9.06054	9.4354	2.99	4.36
4 22 57.4	217	7 49 8.10	50 1.99	22 4 40.8	2 29.0	9.05951	9.4460	2.99	4.36
5 22 56.2	218	7 51 53.05	52 47.13	21 57 53.8	55 38.1	9.05847	9.4563	2.99	4.35
6 22 55.0	219	7 54 37.59	55 31.85	21 50 57.2	48 37.5	9.05742	9.4663	2.99	4.35
7 22 53.8	220	7 57 21.74	58 16.18	21 43 51.1	41 27.4	9.05636	9.4760	2.99	4.34
8 22 52.6	221	8 0 5.49	1 0.11	21 36 35.5	34 7.9	9.05530	9.4854	2.99	4.34
9 22 51.4	222	8 2 48.85	3 43.64	21 29 10.5	26 38.9	9.05423	9.4945	2.99	4.33
10 22 50.2	223	8 5 31.79	6 26.75	21 21 36.2	19 0.6	9.05316	9.5038	2.99	4.33
11 22 49.0	224	8 8 14.35	9 9.48	21 13 52.9	11 13.3	9.05209	9.5118	2.99	4.32
12 22 47.7	225	8 10 56.51	11 51.81	21 6 0.5	3 17.0	9.05101	9.5200	2.99	4.32
13 22 46.5	226	8 13 38.25	14 33.71	20 57 59.2	55 11.8	9.04992	9.5280	2.99	4.31
14 22 45.2	227	8 16 19.58	17 15.20	20 49 49.1	46 57.8	9.04882	9.5358	2.99	4.31
15 22 44.0	228	8 19 0.51	19 56.29	20 41 30.3	38 35.1	9.04771	9.5433	2.99	4.31
16 22 42.7	229	8 21 41.03	22 36.96	20 33 3.0	30 3.9	9.04659	9.5506	2.99	4.30
17 22 41.4	230	8 24 21.13	25 17.21	20 24 27.3	21 24.3	9.04546	9.5577	2.99	4.30
18 22 40.1	231	8 27 0.81	27 57.04	20 15 43.2	12 36.3	9.04432	9.5646	2.99	4.29
19 22 38.8	232	8 29 40.08	30 36.45	20 6 50.8	3 40.1	9.04318	9.5712	2.99	4.29
20 22 37.5	233	8 32 18.92	33 15.43	19 57 50.4	54 35.8	9.04203	9.5777	2.99	4.28
21 22 36.2	234	8 34 57.35	35 54.00	19 48 41.9	45 23.4	9.04087	9.5840	3.00	4.28
22 22 34.9	235	8 37 35.35	38 32.14	19 39 25.5	36 3.1	9.03970	9.5902	3.00	4.27
23 22 33.6	236	8 40 12.93	41 9.85	19 30 1.3	26 35.1	9.03852	9.5962	3.01	4.27
24 22 32.3	237	8 42 50.08	43 47.13	19 20 29.3	16 59.3	9.03734	9.6021	3.02	4.26
25 22 31.0	238	8 45 26.80	46 23.98	19 10 49.6	7 15.9	9.03615	9.6078	3.02	4.25
26 22 29.7	239	8 48 3.08	49 0.39	18 61 2.3	57 24.7	9.03496	9.6133	3.01	4.25
27 22 28.3	240	8 50 38 96	51 36.39	18 51 7.8	47 26.4	9.03376	9.6186	3.01	4.24
28 22 27.0	241	8 53 14.41	54 11.96	18 41 5.9	37 20.8	9.03256	9.6237	3.00	4.23
29 22 25.6	242	8 55 49.42	56 47.09	18 30 57.1	27 8.3	9.03137	9.6287	3.00	4.22
30 22 24.3	243	8 58 23.98	59 21.77	18 20 41.3	16 48.7	9.03019	9.6335	3.00	4.22
31 22 22.9	244	9 0 58.12	1 56.03	+18 10 18.6	6 22.4	+9.02901	−9.6383	−3.00	−4.21

MARS, 1857.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Sept. 1 22 21.6	245	9 3 31.86	4 29.89	+17 59 49.2	55 49.4	+9.02784	−9.6429	−2.99	−4.20
2 22 20.2	246	9 6 5.21	7 3.36	17 49 13.1	45 9.7	9.02668	9.6474	2.99	4.19
3 22 18.8	247	9 8 38.13	9 36.39	17 38 30.5	34 23.5	9.02552	9.6519	2.99	4.18
4 22 17.4	248	9 11 10.64	12 9.02	17 27 41.4	23 30.8	9.02437	9.6562	2.98	4.17
5 22 16.0	249	9 13 42.74	14 41.23	17 16 46.0	12 31.8	9.02322	9.6604	2.98	4.17
6 22 14.6	250	9 16 14.45	17 13.05	17 5 44.3	1 26.6	9.02208	9.6644	2.97	4.16
7 22 13.2	251	9 18 45.76	19 44.47	16 54 36.5	50 15.3	9.02094	9.6684	2.97	4.16
8 22 11.7	252	9 21 16.68	22 15.50	16 43 22.6	38 57.9	9.01981	9.6722	2.96	4.15
9 22 10.3	253	9 23 47.20	24 46.13	16 32 2.8	27 34.6	9.01868	9.6760	2.96	4.14
10 22 8.8	254	9 26 17.34	27 16.38	16 20 37.1	16 5.4	9.01755	9.6797	2.96	4.13
11 22 7.4	255	9 28 47.08	29 46.23	16 9 5.6	4 30.4	9.01642	9.6833	2.96	4.12
12 22 6.0	256	9 31 16.44	32 15.69	15 57 28.4	52 49.8	9.01529	9.6868	2.95	4.11
13 22 4.5	257	9 33 45.40	34 44.75	15 45 45.7	41 3.7	9.01417	9.6901	2.95	4.10
14 22 3.1	258	9 36 13.99	37 13.44	15 33 57.4	29 12.0	9.01304	9.6934	2.95	4.10
15 22 1.6	259	9 38 42.20	39 41.75	15 22 3.9	17 15.2	9.01192	9.6966	2.95	4.09
16 22 0.2	260	9 41 10.02	42 9.67	15 10 5.2	5 13.2	9.01080	9.6997	2.95	4.08
17 21 58.7	261	9 43 37.45	44 37.20	14 58 1.3	53 6.0	9.00968	9.7027	2.95	4.07
18 21 57.2	262	9 46 4.51	47 4.36	14 45 52.5	40 54.0	9.00856	9.7056	2.95	4.06
19 21 55.7	263	9 48 31.19	49 31.14	14 33 39.0	28 37.3	9.00744	9.7084	2.95	4.05
20 21 54.2	264	9 50 57.49	51 57.53	14 21 20.7	16 15.8	9.00633	9.7112	2.94	4.03
21 21 52.6	265	9 53 23.43	54 23.56	14 8 57.8	3 49.8	9.00523	9.7139	2.94	4.02
22 21 51.1	266	9 55 49.00	56 49.22	13 56 30.5	51 19.4	9.00413	9.7165	2.94	4.00
23 21 49.6	267	9 58 14.19	59 14.50	13 43 58.8	38 44.6	9.00304	9.7190	2.94	3.99
24 21 48.1	268	10 0 39.02	1 39.42	13 31 22.8	26 5.6	9.00196	9.7215	2.93	3.98
25 21 46.6	269	10 3 3.48	4 3.97	13 18 42.7	13 22.5	9.00088	9.7238	2.93	3.97
26 21 45.1	270	10 5 27.59	6 28.17	13 5 58.6	0 35.5	8.99980	9.7261	2.92	3.96
27 21 43.5	271	10 7 51.33	8 52.00	12 53 10.6	47 44.6	8.99873	9.7283	2.91	3.95
28 21 42.0	272	10 10 14.74	11 15.51	12 40 18.5	34 49.7	8.99767	9.7304	2.91	3.94
29 21 40.4	273	10 12 37.79	13 38.65	12 27 22.8	21 51.1	8.99665	9.7324	2.90	3.93
30 21 38.9	274	10 15 0.50	16 1.46	12 14 23.4	8 48.9	8.99564	9.7344	2.89	3.92
Oct. 1 21 37.3	275	10 17 22.87	18 23.92	11 61 20.4	55 43.1	8.99464	9.7363	2.88	3.91
2 21 35.8	276	10 19 44.93	20 46.08	11 48 14.0	42 33.9	8.99365	9.7382	2.87	3.90
3 21 34.2	277	10 22 6.67	23 7.91	11 35 4.1	29 21.6	8.99266	9.7401	2.86	3.88
4 21 32.6	278	10 24 28.08	25 29.40	11 21 50.8	16 5.4	8.99170	9.7419	2.86	3.87
5 21 31.0	279	10 26 49.17	27 50.60	11 8 34.6	2 46.6	8.99074	9.7436	2.86	3.85
6 21 29.4	280	10 29 9.98	30 11.50	10 55 15.4	49 24.8	8.98979	9.7452	2.86	3.84
7 21 27.8	281	10 31 30.46	32 32.08	10 41 53.1	35 59.9	8.98884	9.7468	2.86	3.83
8 21 26.2	282	10 33 50.66	34 52.37	10 28 28.0	22 32.3	8.98791	9.7483	2.86	3.81
9 21 24.6	283	10 36 10.55	37 12.36	10 15 0.1	9 1.8	8.98699	9.7498	2.86	3.79
10 21 23.0	284	10 38 30.14	39 32.04	9 61 29.4	55 28.6	8.98607	9.7512	2.86	3.77
11 21 21.4	285	10 40 49.44	41 51.44	9 47 56.2	41 53.0	8.98516	9.7525	2.85	3.75
12 21 19.8	286	10 43 8.47	44 10.56	9 34 20.5	28 14.9	8.98426	9.7538	2.85	3.73
13 21 18.1	287	10 45 27.20	46 29.39	9 20 42.6	14 34.6	8.98337	9.7550	2.84	3.70
14 21 16.5	288	10 47 45.65	48 47.93	9 7 2.2	0 51.9	8.98249	9.7562	2.83	3.67
15 21 14.8	289	10 50 3.82	51 6.19	8 53 19.7	47 7.1	8.98161	9.7573	2.83	3.64
16 21 13.2	290	10 52 21.71	53 24.17	8 39 35.2	33 20.4	8.98074	9.7584	2.82	3.61
17 21 11.5	291	10 54 39.32	55 41.87	8 25 48.5	19 31.5	8.97987	9.7594	2.81	3.57
18 21 9.9	292	10 56 56.65	57 59.31	8 12 0.2	5 41.0	8.97901	9.7603	2.80	3.53
19 21 8.2	293	10 59 13.72	60 16.47	7 58 10.0	51 48.7	8.97816	9.7612	2.80	3.51
20 21 6.6	294	11 1 30.53	2 33.38	7 44 18.4	37 55.1	8.97731	9.7620	2.80	3.49
21 21 4.9	295	11 3 47.06	4 50.00	7 30 25.2	23 59.9	8.97647	9.7628	2.80	3.48
22 21 3.3	296	11 6 3.33	7 6.38	7 16 30.7	10 3.5	8.97564	9.7635	2.79	3.47
23 21 1.6	297	11 8 19.35	9 22.49	7 2 34.9	56 5.8	8.97481	9.7641	2.79	3.46
24 21 0.0	298	11 10 35.10	11 38.34	6 48 38.0	42 7.1	8.97398	9.7647	2.79	3.42
25 20 58.3	299	11 12 50.59	13 53.92	6 34 40.0	28 7.3	8.97316	9.7652	2.78	3.38
26 20 56.6	300	11 15 5.84	16 9.27	6 20 41.0	14 6.6	8.97236	9.7657	2.77	3.34
27 20 54.9	301	11 17 20.85	18 24.37	6 6 41.1	0 5.1	8.97158	9.7661	2.76	3.29
28 20 53.2	302	11 19 35.61	20 39.22	5 52 40.4	46 2.8	8.97082	9.7665	2.75	3.23
29 20 51.5	303	11 21 50.13	22 53.84	5 38 39.0	31 59.8	8.97008	9.7669	2.74	3.11
30 20 49.8	304	11 24 4.43	25 8.24	5 24 36.9	17 56.1	8.96936	9.7672	2.73	3.08
31 20 48.1	305	11 26 18.52	27 22.44	5 10 34.2	3 51.8	8.96866	9.7675	2.72	−2.98
32 20 46.4	306	11 28 32.40	29 36.43	+ 4 56 31.0	49 47.1	+8.96797	−9.7677	−2.71	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Nov. 1 20 46.4	306	11 28 32.40	29 36.43	+ 4 56 31.0	49 47.1	+8.96797	−9.7677	−2 71	
2 20 44.7	307	11 30 46.06	31 50.20	4 42 27.4	35 42.0	8.96730	9.7679	2.70	
3 20 43.0	308	11 32 59.51	34 3.76	4 28 23.4	21 36.6	8.96664	9.7681	2.70	
4 20 41.3	309	11 35 12.75	36 17.11	4 14 19.1	7 30.9	8.96598	9.7682	2.69	
5 20 39.6	310	11 37 25.80	38 30.27	3 60 14.7	53 25.2	8.96533	9.7683	2.69	
6 20 37.8	311	11 39 38.64	40 43.22	3 46 10.2	39 19.4	8.96468	9.7683	2.68	
7 20 36.1	312	11 41 51.28	42 55.97	3 32 5.9	25 13.8	8.96404	9.7682	2.68	
8 20 34.4	313	11 44 3.75	45 8.55	3 18 1.5	11 8.2	8.96340	9.7681	2.68	
9 20 32.6	314	11 46 16.02	47 20.92	2 63 57.4	57 3.0	8.96277	9.7679	2.67	+3.08
10 20 30.9	315	11 48 28.09	49 33.10	2 49 53.6	42 58.1	8.96214	9.7677	2.67	3.14
11 20 29.2	316	11 50 39.97	51 45.09	2 35 50.3	28 53.8	8.96152	9.7675	2.66	3.16
12 20 27.4	317	11 52 51.66	53 56.89	2 21 47.7	14 50.1	8.96090	9.7672	2.66	3.23
13 20 25.7	318	11 55 3.17	56 8.51	2 7 45.6	0 47.1	8.96029	9.7668	2.66	3.29
14 20 24.0	319	11 57 14.49	58 19.93	1 53 44.2	46 44.8	8.95969	9.7664	2.65	3.34
15 20 22.2	320	11 59 25.63	60 31.18	1 39 43.7	32 43.5	8.95909	9.7659	2.65	3.39
16 20 20.5	321	12 1 36.58	2 42.24	1 25 44.1	18 43.1	8.95849	9.7654	2.64	3.44
17 20 18.7	322	12 3 47.36	4 53.13	1 11 45.7	4 43.9	8.95789	9.7648	2.64	3.49
18 20 17.0	323	12 5 57.96	7 3.84	0 57 48.3	50 45.9	8.95728	9.7642	2.63	3.53
19 20 15.2	324	12 8 8.37	9 14.35	0 43 52.2	36 49.2	8.95667	9.7635	2.63	3.55
20 20 13.5	325	12 10 18.61	11 24.70	0 29 57.5	22 54.0	8.95607	9.7628	2.62	3.57
21 20 11.7	326	12 12 28.66	13 34.86	0 16 4.2	+ 9 0.3	8.95548	9.7620	2.62	3.59
22 20 9.9	327	12 14 38.52	15 44.83	+ 0 2 12.5	− 4 51.9	8.95489	9.7612	2.61	3.61
23 20 8.2	328	12 16 48.22	17 54.64	− 0 11 37.5	18 42.3	8.95430	9.7604	2.61	3.64
24 20 6.4	329	12 18 57.75	20 4.27	0 25 25.8	32 31.0	8.95372	9.7595	2.60	3.66
25 20 4.6	330	12 21 7.11	22 13.74	0 39 12.4	46 17.9	8.95315	9.7585	2.59	3.68
26 20 2.8	331	12 23 16.30	24 23.04	0 52 57.0	60 2.7	8.95259	9.7575	2.59	3.70
27 20 1.0	332	12 25 25.33	26 32.18	1 6 39.8	13 45.6	8.95204	9.7564	2.58	3.72
28 19 59.2	333	12 27 34.19	28 41.15	1 20 20.7	27 26.6	8.95150	9.7553	2.58	3.72
29 19 57.4	334	12 29 42.89	30 49.95	1 34 59.3	41 5.4	8.95097	9.7542	2.58	3.73
30 19 55.6	335	12 31 51.42	32 58.59	1 47 36.0	54 42.2	8.95045	9.7530	2.57	3.74
Dec. 1 19 53.8	336	12 33 59.80	35 7.08	2 1 10.4	8 16.7	8.94995	9.7518	2.57	3.75
2 19 52.0	337	12 36 8.04	37 15.43	2 14 42.5	21 48.9	8.94945	9.7506	2.57	3.76
3 19 50.2	338	12 38 16.15	39 23.65	2 28 12.1	35 18.4	8.94895	9.7493	2.57	3.78
4 19 48.4	339	12 40 24.12	41 31.73	2 41 39.3	48 45.4	8.94845	9.7480	2.56	3.79
5 19 46.6	340	12 42 31.93	43 39.65	2 55 4.0	62 9.9	8.94795	9.7466	2.56	3.80
6 19 44.8	341	12 44 39.60	45 47.43	3 8 26.2	15 31.8	8.94744	9.7452	2.57	3.81
7 19 43.0	342	12 46 47.11	47 55.05	3 21 45.6	28 50.9	8.94693	9.7437	2.57	3.82
8 19 41.2	343	12 48 54.47	50 2.52	3 35 2.3	42 7.2	8.94640	9.7422	2.57	3.84
9 19 39.4	344	12 51 1.67	52 9.82	3 48 16.2	55 20.6	8.94586	9.7406	2.57	3.86
10 19 37.6	345	12 53 8.71	54 16.96	4 1 27.0	8 30.9	8.94532	9.7389	2.58	3.88
11 19 35.8	346	12 55 15.61	56 23.96	4 14 34.7	21 38.0	8.94477	9.7371	2.58	3.90
12 19 33.9	347	12 57 22.33	58 30.78	4 27 39.2	34 42.0	8.94421	9.7353	2.58	3.91
13 19 32.1	348	12 59 28.89	60 37.43	4 40 40.4	47 42.5	8.94366	9.7334	2.59	3.92
14 19 30.2	349	13 1 35.29	2 43.92	4 53 38.2	60 39.5	8.94309	9.7315	2.59	3.94
15 19 28.4	350	13 3 41.52	4 50.24	5 6 32.5	13 33.1	8.94251	9.7295	2.60	3.95
16 19 26.6	351	13 5 47.57	6 56.38	5 19 23.3	26 23.0	8.94193	9.7275	2.60	3.96
17 19 24.7	352	13 7 53.45	9 2.35	5 32 10.3	39 9.1	8.94132	9.7255	2.61	3.97
18 19 22.9	353	13 9 59.16	11 8.14	5 44 53.8	51 51.6	8.94069	9.7234	2.62	3.97
19 19 21.0	354	13 12 4.70	13 13.76	5 57 33.3	64 30.0	8.94005	9.7212	2 62	3.98
20 19 19.2	355	13 14 10.55	15 19.19	6 10 9.0	17 4.6	8.93940	9.7189	2.63	3.98
21 19 17.3	356	13 16 15.20	17 24.41	6 22 40.6	29 35.0	8.93873	9.7165	2.64	3.99
22 19 15.5	357	13 18 20.16	19 29.44	6 35 8.0	42 1.2	8.93806	9.7141	2.65	4.00
23 19 13.6	358	13 20 24.92	21 34.27	6 47 31.5	54 23.4	8.93738	9.7117	2.66	4.01
24 19 11.8	359	13 22 29.48	23 38.90	6 59 50.8	66 41.4	8.93669	9.7092	2.66	4.01
25 19 9.9	360	13 24 33.84	25 43.34	7 12 5.8	18 55.1	8.93598	9.7067	2.67	4.02
26 19 8.1	361	13 26 38.00	27 47.57	7 24 16.5	31 4.5	8.93527	9.7042	2.67	4.02
27 19 6.2	362	13 28 41.96	29 51.59	7 36 22.9	43 9.6	8.93456	9.7016	2.68	4.03
28 19 4.4	363	13 30 45.71	31 55.41	7 48 25.0	55 10.3	8.93386	9.6990	2.68	4.03
29 19 2.5	364	13 32 49.26	33 59.02	8 0 22.5	7 6.4	8.93315	9.6963	2.69	4.03
30 19 0.6	365	13 34 52.60	36 2.42	8 12 15.5	18 58.1	8.93245	9.6936	2.70	4.03
31 18 58.7	366	13 36 55.76	38 5.64	8 24 4.1	30 45.4	8.93175	9.6908	2.70	4.03
32 18 56.8	367	13 38 58.72	40 8.66	− 8 35 48.1	42 28.2	+8.93104	−9.6879	−2.70	+4.03

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Jan. 0 5 25.9	0	0 8 0.33	8 0.49	− 0 32 30.3	32 29.2	+8.2555	+9.1092	+3.14	+3.95
1 5 22.4	1	0 8 26 55	8 26.72	0 29 23.3	29 22.2	8.2649	9.1178	3.14	3.94
2 5 18.9	2	0 8 53.34	8 53.52	0 26 12.7	26 11.6	8.2742	9.1260	3.13	3.94
3 5 15.5	3	0 9 20 70	9 20.88	0 22 58.5	22 57.3	8.2832	9.1339	3 13	3.93
4 5 12.0	4	0 9 48.63	9 48.81	0 19 40.7	19 39.4	8.2920	9.1416	3.13	3.92
5 5 8.6	5	0 10 17.12	10 17.31	0 16 19.5	16 18.1	8.3004	9.1491	3.12	3.91
6 5 5.1	6	0 10 46.16	10 46.37	0 12 54.8	12 53.3	8.3085	9.1562	3.12	3.91
7 5 1.7	7	0 11 15.75	11 15.98	0 9 26.8	9 25.2	8.3163	9.1632	3.11	3.90
8 4 58.2	8	0 11 45.87	11 46.12	0 5 55.4	5 53.7	8.3239	9.1700	3.11	3.89
9 4 54.8	9	0 12 16.52	12 16.79	− 0 2 20.8	2 19.0	8.3319	9.1766	3.10	3.89
10 4 51.4	10	0 12 47.70	12 47.99	+ 0 1 17.1	1 19.0	8.3391	9.1831	3.10	3.88
11 4 48.0	11	0 13 19.40	13 19.71	0 4 58.1	5 0.1	8.3462	9.1893	3.09	3.88
12 4 44.6	12	0 13 51.61	13 51.94	0 8 42.3	8 44.4	8.3531	9.1953	3.09	3.87
13 4 41.2	13	0 14 24.33	14 24.68	0 12 29.5	12 31.7	8.3599	9.2011	3.08	3.86
14 4 37.8	14	0 14 57.55	14 57.91	0 16 19.7	16 22.1	8.3664	9.2068	3.08	3.86
15 4 34.4	15	0 15 31.26	15 31.63	0 20 13.0	20 15.5	8.3727	9.2123	3.07	3.85
16 4 31.0	16	0 16 5.45	16 5.84	0 24 9.2	24 11.8	8.3788	9.2177	3.06	3.84
17 4 27.7	17	0 16 40.12	16 40.53	0 28 8.4	28 11.1	8.3847	9.2230	3.06	3.84
18 4 24.3	18	0 17 15.27	17 15.70	0 32 10.4	32 13.3	8.3904	9.2280	3.05	3.83
19 4 21.0	19	0 17 50.88	17 51.33	0 36 15.3	36 18.3	8.3960	9.2330	3.04	3.82
20 4 17.6	20	0 18 26.95	18 27.42	0 40 22.9	40 26.1	8.4014	9.2379	3.04	3.82
21 4 14.3	21	0 19 3.47	19 3.96	0 44 33.3	44 36.6	8.4068	9.2426	3.03	3.81
22 4 11.0	22	0 19 40.44	19 40.95	0 48 46.4	48 49.8	8.4121	9.2472	3.03	3.80
23 4 7.7	23	0 20 17.85	20 18.38	0 53 2 1	53 5.7	8.4172	9.2516	3.02	3.79
24 4 4.4	24	0 20 55.70	20 56.25	0 57 20.4	57 24.1	8.4220	9.2559	3.01	3.78
25 4 1.1	25	0 21 33.97	21 34.54	1 1 41.2	1 45.1	8.4268	9.2601	3.01	3.78
26 3 57.8	26	0 22 12.66	22 13.25	1 6 4.5	6 8.5	8.4315	9.2640	3.00	3.77
27 3 54.6	27	0 22 51.76	22 52.38	1 10 30 2	10 34.4	8.4361	9.2679	2.99	3.76
28 3 51.3	28	0 23 31.27	23 31.91	1 14 58.2	15 2.6	8.4406	9.2717	2.98	3.75
29 3 48.0	29	0 24 11.18	24 11.85	1 19 28.6	19 33.2	8.4449	9.2754	2.98	3.74
30 3 44.7	30	0 24 51.48	24 52.18	1 24 1.3	24 6.1	8.4490	9.2791	2.97	3.73
31 3 41.5	31	0 25 32.16	25 32.89	1 28 36.3	28 41.2	8.4531	9.2827	2.96	3.72
Feb. 1 3 38.2	32	0 26 13.22	26 13.97	1 33 13.4	33 18.5	8.4570	9.2860	2.95	3.71
2 3 35.0	33	0 26 54 65	26 55.43	1 37 52.6	37 57.9	8.4609	9.2892	2.95	3.70
3 3 31.7	34	0 27 36.44	27 37.25	1 42 33.8	42 39.3	8.4646	9.2923	2.94	3.69
4 3 28.5	35	0 28 18 59	28 19.43	1 47 17.1	47 22.7	8.4683	9.2953	2.93	3.67
5 3 25.3	36	0 29 1.08	29 1.95	1 52 2.3	52 8.1	8.4718	9.2982	2.92	3.66
6 3 22.1	37	0 29 43.92	29 44.82	1 56 49.4	56 55.4	8.4753	9.3010	2.92	3.65
7 3 18.9	38	0 30 27.09	30 28.02	2 1 38.3	1 44.5	8.4786	9.3037	2.91	3.64
8 3 15.7	39	0 31 10.60	31 11.56	2 6 29.1	6 35.5	8.4819	9.3064	2.90	3.63
9 3 12.5	40	0 31 54.44	31 55.43	2 11 21.7	11 28.2	8.4850	9.3090	2 89	3.62
10 3 9.3	41	0 32 38.60	32 39.62	2 16 16.0	16 22.7	8.4881	9.3116	2.88	3.61
11 3 6.1	42	0 33 23.07	33 24.12	2 21 12.0	21 18.9	8.4911	9.3141	2.87	3.60
12 3 2.9	43	0 34 7.84	34 8.93	2 26 9.6	26 16.7	8.4941	9.3165	2.86	3.59
13 2 59.7	44	0 34 52.92	34 54.03	2 31 8.9	31 16.2	8.4970	9.3188	2.86	3.58
14 2 56.5	45	0 35 38.29	35 39.43	2 36 9.7	36 17.2	8.4999	9.3210	2.85	3.57
15 2 53.3	46	0 36 23.96	36 25.13	2 41 12.1	41 19.8	8.5026	9.3232	2.84	3.56
16 2 50.2	47	0 37 9.92	37 11.12	2 46 15.9	46 23.8	8.5053	9.3253	2.83	3.54
17 2 47.0	48	0 37 56.16	37 57.39	2 51 21.2	51 29.3	8.5080	9.3273	2.82	3.53
18 2 43.8	49	0 38 42.68	38 43.94	2 56 27.9	56 36.2	8.5106	9.3292	2.82	3.52
19 2 40.6	50	0 39 29.48	39 30.77	3 1 35.9	1 44.4	8.5131	9.3311	2.81	3.51
20 2 37.5	51	0 40 16.54	40 17.87	3 6 45.3	6 54.0	8.5156	9.3330	2.80	3.49
21 2 34 3	52	0 41 3.87	41 5.23	3 11 56.0	12 4.9	8.5179	9.3348	2.79	3.48
22 2 31.2	53	0 41 51.45	41 52.84	3 17 7.9	17 17.0	8.5202	9.3365	2.78	3 46
23 2 28.1	54	0 42 39 28	42 40.70	3 22 21.0	22 30.3	8.5224	9.3381	2.77	3.44
24 2 25.0	55	0 43 27.35	43 28 80	3 27 35.2	27 44.8	3.5246	9.3397	2.76	3.42
25 2 21.8	56	0 44 15.66	44 17.14	3 32 50.5	33 0.3	8.5267	9.3411	2.75	3.40
26 2 18.7	57	0 45 4.20	45 5.71	3 38 6.9	38 16.9	8.5287	9.3425	2.74	3.38
27 2 15.6	58	0 45 52.97	45 54.52	3 43 24.3	43 34.5	8.5307	9.3438	2.73	3.36
28 2 12.5	59	0 46 41.96	46 43.55	3 48 42.6	48 53.0	8.5327	9.3450	2.71	3.34
29 2 9.4	60	0 47 31.17	47 32.79	3 54 1.8	54 12.4	8.5346	9.3463	2.70	3 32
30 2 6.3	61	0 48 20.59	48 22.24	+ 3 59 21.9	59 32.7	+8.5364	+9.3475	+2.69	+3.30

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of *t* in Sidereal Minutes.		Log. Coefficient of *t*².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Mar. 1 2 9.4	60	0 47 31.17	47 32.79	+ 3 54 1.8	54 12.4	+8.5346	+9.3463	+2.70	+3.32
2 2 6.3	61	0 48 20.59	48 22.24	3 59 21.9	59 32.7	8.5364	9.3475	2.69	3.30
3 2 3.2	62	0 49 10.21	49 11.88	4 4 42.8	4 53.8	8.5381	9.3486	2.68	3.28
4 2 0.1	63	0 50 0.01	50 1.72	4 10 4.5	10 15.7	8.5397	9.3496	2.66	3.25
5 1 57.0	64	0 50 50.00	50 51.75	4 15 26.9	15 38.3	8.5413	9.3506	2.65	3.23
6 1 53.9	65	0 51 40.18	51 41.97	4 20 50.0	21 1.6	8.5429	9.3515	2.64	3.21
7 1 50.8	66	0 52 30.55	52 32.38	4 26 13.7	26 25.6	8.5445	9.3523	2.63	3.18
8 1 47.7	67	0 53 21.11	53 22.97	4 31 38.1	31 50.2	8.5461	9.3531	2.62	3.15
9 1 44.6	68	0 54 11.85	54 13.74	4 37 3.1	37 15.4	8.5475	9.3538	2.61	3.12
10 1 41.5	69	0 55 2.76	55 4.68	4 42 28.6	42 41.1	8.5489	9.3545	2.60	3.09
11 1 38.4	70	0 55 53.82	55 55.78	4 47 54.6	48 7.3	8.5503	9.3551	2.59	3.05
12 1 35.3	71	0 56 45.03	56 47.03	4 53 21.0	53 33.9	8.5516	9.3557	2.58	+3.01
13 1 32.2	72	0 57 36.39	57 38.43	4 58 47.8	59 0.9	8.5528	9.3563	2.57	
14 1 29.2	73	0 58 27.90	58 29.98	5 4 15.1	4 28.4	8.5540	9.3568	2.56	
15 1 26.1	74	0 59 19.56	59 21.68	5 9 42.7	9 56.2	8.5552	9.3573	2.55	
16 1 23.1	75	1 0 11.38	0 13.53	5 15 10.7	15 24.4	8.5564	9.3577	2.53	
17 1 20.0	76	1 1 3.34	1 5.53	5 20 39.0	20 52.9	8.5576	9.3581	2.52	
18 1 17.0	77	1 1 55.43	1 57.66	5 26 7.5	26 21.6	8.5588	9.3584	2.50	
19 1 13.9	78	1 2 47.65	2 49.92	5 31 36.2	31 50.5	8.5599	9.3587	2.49	
20 1 10.9	79	1 3 40.00	3 42.30	5 37 5.1	37 19.6	8.5610	9.3589	2.47	
21 1 7.8	80	1 4 32.47	4 34.81	5 42 34.2	42 48.9	8.5620	9.3590	2.45	
22 1 4.7	81	1 5 25.06	5 27.44	5 48 3.4	48 18.3	8.5630	9.3591	2.43	
23 1 1.7	82	1 6 17.76	6 20.18	5 53 32.7	53 47.8	8.5639	9.3592	2.41	
24 0 58.6	83	1 7 10.56	7 13.02	5 59 2.0	59 17.4	8.5647	9.3593	2.39	
25 0 55.6	84	1 8 3.46	8 5.95	6 4 31.4	4 47.0	8.5655	9.3593	2.37	
26 0 52.5	85	1 8 56.46	8 58.99	6 10 0.7	10 16.5	8.5663	9.3593	2.35	
27 0 49.5	86	1 9 49.56	9 52.13	6 15 30.0	15 46.0	8.5671	9.3592	2.33	
28 0 46.4	87	1 10 42.75	10 45.36	6 20 59.1	21 15.3	8.5679	9.3590	2.31	
29 0 43.4	88	1 11 36.03	11 38.67	6 26 28.0	26 44.4	8.5686	9.3588	2.28	
30 0 40.3	89	1 12 29.38	12 32.06	6 31 56.8	32 13.4	8.5692	9.3585	+2.25	
31 0 37.3	90	1 13 22.80	13 25.52	6 37 25.3	37 42.1	8.5697	9.3581		
Apr. 1 0 34.2	91	1 14 16.28	14 19.04	6 42 53.6	43 10.5	8.5702	9.3577		
2 0 31.2	92	1 15 9.83	15 12.62	6 48 21.5	48 38.6	8.5707	9.3572		
3 0 28.2	93	1 16 3.44	16 6.27	6 53 49.1	54 6.4	8.5711	9.3567		
4 0 25.1	94	1 16 57.10	16 59.98	6 59 16.3	59 33.8	8.5716	9.3562		
5 0 22.1	95	1 17 50.82	17 53.73	7 4 43.1	5 0.8	8.5720	9.3556		−3.03
6 0 19.1	96	1 18 44.58	18 47.52	7 10 9.4	10 27.3	8.5724	9.3550		3.06
7 0 16.0	97	1 19 38.39	19 41.36	7 15 35.3	15 53.4	8.5728	9.3544		3.08
8 0 13.0	98	1 20 32.23	20 85.24	7 21 0.7	21 18.9	8.5731	9.3537		3.10
9 0 10.0	99	1 21 26.11	21 29.15	7 26 25.5	26 43.9	8.5733	9.3529		3.12
10 0 6.9	100	1 22 20.01	22 23.09	7 31 49.8	32 8.4	8.5735	9.3522		3.14
11 0 3.9	101	1 23 13.95	23 17.06	7 37 13.5	37 32.3	8.5737	9.3514		3.16
12 0 0.9	102	1 24 7.91	24 11.06	7 42 36.7	42 55.7	8.5739	9.3506		3.18
12 23 57.8	103	1 25 1.90	25 5.08	7 47 59.2	48 18.4	8.5741	9.3498		3.20
13 23 54.8	104	1 25 55.90	25 59.12	7 53 21.1	53 40.4	8.5742	9.3489		3.22
14 23 51.8	105	1 26 49.92	26 53.18	7 58 42.3	59 1.7	8.5742	9.3479		3.24
15 23 48.8	106	1 27 43.95	27 47.24	8 4 2.8	4 22.3	8.5742	9.5469		3.26
16 23 45.7	107	1 28 37.98	28 41.31	8 9 22.5	9 42.2	8.5742	9.3458		3.27
17 23 42.7	108	1 29 32.01	29 35.37	8 14 41.4	15 1.3	8.5742	9.3447		3.29
18 23 39.7	109	1 30 26.04	30 29.43	8 19 59.6	20 19.6	8.5742	9.3436		3.31
19 23 36.6	110	1 31 20.06	31 23.49	8 25 16.9	25 37.1	8.5741	9.3424		3.33
20 23 33.6	111	1 32 14.07	32 17.53	8 30 33.4	30 53.7	8.5740	9.3412		3.34
21 23 30.5	112	1 33 8.06	33 11.56	8 35 48.9	36 9.4	8.5739	9.3400		3.36
22 23 27.5	113	1 34 2.03	34 5.57	8 41 3.5	41 24.1	8.5737	9.3387		3.38
23 23 24.5	114	1 34 55.98	34 59.55	8 46 17.1	46 37.8	8.5735	9.3373		3.39
24 23 21.4	115	1 35 49.89	35 53.49	8 51 29.8	51 50.6	8.5733	9.3359		3.40
25 23 18.4	116	1 36 43.77	36 47.40	8 56 41.5	57 2.4	8.5730	9.3344		3.42
26 23 15.4	117	1 37 37.61	37 41.27	9 1 52.0	2 13.1	8.5726	9.3329		3.43
27 23 12.3	118	1 38 31.40	38 35.09	9 7 1.4	7 22.6	8.5722	9.3313		3.44
28 23 9.3	119	1 39 25.13	39 28.85	9 12 9.6	12 30.9	8.5717	9.3297		3.45
29 23 6.2	120	1 40 18.81	40 22.56	9 17 16.6	17 38.0	8.5712	9.3280		3.46
30 23 3.2	121	1 41 12.43	41 16.21	+ 9 22 22.5	22 44.0	+8.5707	+9.3263		−3.47

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
May 1 23 0.2	122	1 42 5.98	42 9.79	+ 9 27 27.1	27 48.7	+8.5702	+9.3246		−3.48
2 22 57.1	123	1 42 59.46	43 3.30	9 32 30.5	32 52.2	8.5696	9.3228	−2.24	3.48
3 22 54.1	124	1 43 52.88	43 56.74	9 37 32.6	37 54.4	8.5690	9.3210	2.27	3.49
4 22 51.1	125	1 44 46.22	44 50.11	9 42 33.5	42 55.4	8.5684	9.3192	2.29	3.50
5 22 48.0	126	1 45 39.48	45 43.40	9 47 33.1	47 55.0	8.5677	9.3173	2.31	3.51
6 22 45.0	127	1 46 32.65	46 36.60	9 52 31.3	52 53.3	8.5669	9.3153	2.33	3.51
7 22 41.9	128	1 47 25.73	47 29.70	9 57 28.1	57 50.2	8.5662	9.3133	2.35	3.52
8 22 38.9	129	1 48 18.72	48 22.71	10 2 23.6	2 45.8	8.5654	9.3112	2.37	3.53
9 22 35.8	130	1 49 11.62	49 15.63	10 7 17.7	7 40.0	8.5646	9.3091	2.39	3.54
10 22 32.8	131	1 50 4.41	50 8.44	10 12 10.4	12 32.7	8.5638	9.3070	2.40	3.54
11 22 29.7	132	1 50 57.10	51 1.16	10 17 1.6	17 24.0	8.5629	9.3049	2.42	3.55
12 22 26.6	133	1 51 49.69	51 53.77	10 21 51.4	22 13.9	8.5620	9.3027	2.44	3.56
13 22 23.6	134	1 52 42.17	52 46.27	10 26 39.7	27 2.3	8.5611	9.3004	2.46	3.57
14 22 20.5	135	1 53 34.53	53 38.66	10 31 26.5	31 49.1	8.5601	9.2980	2.47	3.57
15 22 17.4	136	1 54 26.77	54 30.93	10 36 11.7	36 34.4	8.5591	9.2956	2.49	3.58
16 22 14.4	137	1 55 18.89	55 23.07	10 40 55.4	41 18.1	8.5580	9.2932	2.51	3.59
17 22 11.3	138	1 56 10.88	56 15.08	10 45 37.5	46 0.3	8.5569	9.2907	2.53	3.60
18 22 8.3	139	1 57 2.72	57 6.94	10 50 18.0	50 40.8	8.5557	9.2882	2.54	3.60
19 22 5.2	140	1 57 54.42	57 58.66	10 54 56.8	55 19.6	8.5544	9.2856	2.56	3.61
20 22 2.2	141	1 58 45.97	58 50.23	10 59 34.0	59 56.8	8.5531	9.2830	2.57	3.62
21 21 59.1	142	1 59 37.37	59 41.65	11 4 9.5	4 32.3	8.5518	9.2803	2.59	3.63
22 21 56.0	143	2 0 28.61	0 32.91	11 8 43.2	9 6.1	8.5505	9.2776	2.60	3.63
23 21 52.9	144	2 1 19.69	1 24.00	11 13 15.2	13 38.1	8.5490	9.2748	2.62	3.64
24 21 49.8	145	2 2 10.60	2 14.92	11 17 45.4	18 8.3	8.5475	9.2719	2.63	3.64
25 21 46.7	146	2 3 1.33	3 5.67	11 22 13.8	22 36.7	8.5460	9.2689	2.64	3.65
26 21 43.6	147	2 3 51.88	3 56.23	11 26 40.4	27 3.3	8.5444	9.2659	2.65	3.65
27 21 40.4	148	2 4 42.25	4 46.61	11 31 5.1	31 28.0	8.5428	9.2628	2.67	3.66
28 21 37.3	149	2 5 32.42	5 36.79	11 35 27.9	35 50.8	8.5412	9.2597	2.68	3.66
29 21 34.2	150	2 6 22.40	6 26.78	11 39 48.8	40 11.7	8.5395	9.2565	2.69	3.67
30 21 31.1	151	2 7 12.17	7 16.56	11 44 7.8	44 30.6	8.5377	9.2532	2.70	3.67
31 21 28.0	152	2 8 1.74	8 6.14	11 48 24.8	48 47.6	8.5359	9.2499	2.71	3.67
June 1 21 24.9	153	2 8 51.09	8 55.50	11 52 39.9	53 2.6	8.5340	9.2466	2.72	3.68
2 21 21.8	154	2 9 40.23	9 44.65	11 56 53.0	57 15.7	8.5321	9.2432	2.73	3.68
3 21 18.7	155	2 10 29.15	10 33.58	12 1 4.1	1 26.8	8.5301	9.2398	2.74	3.69
4 21 15.5	156	2 11 17.85	11 22.29	12 5 13.2	5 35.9	8.5281	9.2363	2.75	3.69
5 21 12.4	157	2 12 6.32	12 10.77	12 9 20.3	9 42.9	8.5260	9.2327	2.76	3.70
6 21 9.3	158	2 12 54.56	12 59.01	12 13 25.3	13 47.8	8.5239	9.2290	2.77	3.70
7 21 6.2	159	2 13 42.56	13 47.01	12 17 28.3	17 50.7	8.5218	9.2252	2.78	3.71
8 21 3.0	160	2 14 30.32	14 34.77	12 21 29.1	21 51.5	8.5195	9.2214	2.79	3.71
9 20 59.9	161	2 15 17.82	15 22.28	12 25 27.9	25 50.2	8.5171	9.2176	2.80	3.72
10 20 56.9	162	2 16 5.06	16 9.52	12 29 24.6	29 46.9	8.5147	9.2138	2.81	3.72
11 20 53.6	163	2 16 52.04	16 56.50	12 33 19.2	33 41.5	8.5124	9.2100	2.82	3.72
12 20 50.4	164	2 17 38.76	17 43.22	12 37 11.7	37 33.9	8.5100	9.2060	2.83	3.73
13 20 47.3	165	2 18 25.22	18 29.67	12 41 1.9	41 24.1	8.5075	9.2018	2.84	3.73
14 20 44.1	166	2 19 11.39	19 15.84	12 44 50.0	45 12.0	8.5048	9.1976	2.85	3.73
15 20 41.0	167	2 19 57.27	20 1.71	12 48 35.8	48 57.7	8.5020	9.1933	2.86	3.74
16 20 37.8	168	2 20 42.86	20 47.30	12 52 19.3	52 41.1	8.4991	9.1889	2.86	3.74
17 20 34.6	169	2 21 28.15	21 32.59	12 56 0.6	56 22.3	8.4961	9.1844	2.87	3.74
18 20 31.4	170	2 22 13.13	22 17.57	12 59 39.6	0° 1.2	8.4931	9.1798	2.88	3.75
19 20 28.2	171	2 22 57.80	23 2.23	13 3 16.3	3 37.8	8.4900	9.1751	2.89	3.75
20 20 25.0	172	2 23 42.14	23 46.56	13 6 50.6	7 12.0	8.4868	9.1703	2.89	3.75
21 20 21.8	173	2 24 26.16	24 30.57	13 10 22.5	10 43.8	8.4836	9.1654	2.90	3.76
22 20 18.6	174	2 25 9.85	25 14.25	13 13 52.1	14 13.2	8.4803	9.1605	2.91	3.76
23 20 15.4	175	2 25 53.21	25 57.60	13 17 19.3	17 40.2	8.4770	9.1554	2.92	3.76
24 20 12.2	176	2 26 36.23	26 40.60	13 20 44.1	21 4.8	8.4735	9.1503	2.92	3.77
25 20 9.0	177	2 27 18.90	27 23.25	13 24 6.4	24 27.0	8.4699	9.1451	2.93	3.77
26 20 5.7	178	2 28 1.22	28 5.54	13 27 26.3	27 46.7	8.4662	9.1397	2.94	3.77
27 20 2.5	179	2 28 43.17	28 47.47	13 30 43.7	31 3.9	8.4625	9.1342	2.95	3.78
28 19 59.2	180	2 29 24.75	29 29.03	13 33 58.6	34 18.7	8.4586	9.1286	2.96	3.78
29 19 56.0	181	2 30 5.94	30 10.20	13 37 11.0	37 30.9	8.4545	9.1229	2.96	3.78
30 19 52.7	182	2 30 46.74	30 50.97	13 40 20.8	40 40.5	8.4503	9.1171	2.97	3.79
31 19 49.5	183	2 31 27.14	31 31.34	+13 43 28.1	43 47.6	+8.4460	+9.1112	−2.98	−3.79

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
July 1 19 49.5	183	2 31 27.14	31 31.34	+13 43 28.1	43 47.6	+8.4460	+9.1112	−2.98	−3.79
2 19 46.2	184	2 32 7.13	32 11.31	13 46 32.8	46 52.1	8.4416	9.1051	2.99	3.79
3 19 43.0	185	2 32 46.71	32 50.86	13 49 34.9	49 54.0	8.4371	9.0989	2.99	3.79
4 19 39.7	186	2 33 25.88	33 30.01	13 52 34.4	52 53.3	8.4325	9.0926	3.00	3.80
5 19 36.4	187	2 34 4.64	34 8.74	13 55 31.4	55 50.1	8.4279	9.0862	3.01	3.80
6 19 33.1	188	2 34 42.98	34 47.06	13 58 25.7	58 44.2	8.4231	9.0797	3.01	3.80
7 19 29.8	189	2 35 20.90	35 24.95	14 1 17.4	1 35.7	8.4181	9.0731	3.02	3.80
8 19 26.5	190	2 35 58.39	36 2.41	14 4 6.5	4 24.6	8.4130	9.0663	3.02	3.81
9 19 23.2	191	2 36 35.44	36 39.43	14 6 52.9	7 10.8	8.4078	9.0594	3.03	3.81
10 19 19.8	192	2 37 12.04	37 16.00	14 9 36.6	9 54.3	8.4024	9.0523	3.04	3.81
11 19 16.5	193	2 37 48.19	37 52.12	14 12 17.7	12 35.1	8.3969	9.0450	3.04	3.82
12 19 13.2	194	2 38 23.87	38 27.77	14 14 56.0	15 13.2	8.3912	9.0375	3.05	3.82
13 19 9.9	195	2 38 59.08	39 2.94	14 17 31.6	17 48.5	8.3854	9.0299	3.06	3.82
14 19 6.5	196	2 39 33.82	39 37.64	14 20 4.4	20 21.1	8.3794	9.0220	3.07	3.83
15 19 3.2	197	2 40 8.07	40 11.85	14 22 34.5	22 50.9	8.3732	9.0139	3.08	3.83
16 18 59.8	198	2 40 41.83	40 45.56	14 25 1.8	25 18.0	8.3668	9.0055	3.08	3.83
17 18 56.4	199	2 41 15.08	41 18.76	14 27 26.2	27 42.3	8.3601	8.9970	3.09	3.84
18 18 53.0	200	2 41 47.81	41 51.44	14 29 47.8	30 3.6	8.3532	8.9882	3.10	3.84
19 18 49.6	201	2 42 20.01	42 23.59	14 32 6.5	32 22.0	8.3461	8.9792	3.10	3.84
20 18 46.2	202	2 42 51.69	42 55.22	14 34 22.4	34 37.6	8.3388	8.9700	3.11	3.84
21 18 42.8	203	2 43 22.84	43 26.32	14 36 35.4	36 50.3	8.3313	8.9605	3.12	3.85
22 18 39.3	204	2 43 53.45	43 56.88	14 38 45.4	39 0.0	8.3236	8.9508	3.12	3.85
23 18 35.9	205	2 44 23.50	44 26.88	14 40 52.5	41 6.8	8.3156	8.9408	3.13	3.85
24 18 32.4	206	2 44 52.99	44 56.32	14 42 56.7	43 10.7	8.3074	8.9305	3.14	3.85
25 18 29.0	207	2 45 21.91	45 25.19	14 44 57.9	45 11.6	8.2989	8.9199	3.14	3.85
26 18 25.5	208	2 45 50.27	45 53.49	14 46 56.2	47 9.6	8.2900	8.9089	3.15	3.86
27 18 22.1	209	2 46 18.05	46 21.21	14 48 51.5	49 4.6	8.2807	8.8976	3.16	3.86
28 18 18.6	210	2 46 45.24	46 48.34	14 50 43.8	50 56.6	8.2712	8.8860	3.16	3.86
29 18 15.1	211	2 47 11.83	47 14.87	14 52 33.1	52 45.6	8.2614	8.8741	3.17	3.86
30 18 11.6	212	2 47 37.82	47 40.80	14 54 19.4	54 31.6	8.2513	8.8618	3.17	3.86
31 18 8.1	213	2 48 3.20	48 6.12	14 56 2.6	56 14.5	8.2409	8.8491	3.17	3.86
Aug. 1 18 4.6	214	2 48 27.97	48 30.83	14 57 42.8	57 54.4	8.2301	8.8360	3.18	3.87
2 18 1.1	215	2 48 52.12	48 54.92	14 59 20.0	59 31.3	8.2189	8.8224	3.18	3.87
3 17 57.5	216	2 49 15.65	49 18.38	15 0 54.1	1 5.1	8.2073	8.8083	3.18	3.87
4 17 54.0	217	2 49 38.55	49 41.21	15 2 25.2	2 35.8	8.1954	8.7937	3.19	3.87
5 17 50.4	218	2 50 0.81	50 3.40	15 3 53.2	4 3.4	8.1829	8.7784	3.19	3.88
6 17 46.8	219	2 50 22.43	50 24.94	15 5 18.1	5 28.0	8.1700	8.7625	3.19	3.88
7 17 43.2	220	2 50 43.40	50 45.83	15 6 39.9	6 49.4	8.1564	8.7458	3.20	3.88
8 17 39.6	221	2 51 3.71	51 6.06	15 7 58.5	8 7.7	8.1422	8.7283	3.20	3.88
9 17 36.0	222	2 51 23.34	51 25.62	15 9 14.0	9 22.8	8.1273	8.7100	3.21	3.88
10 17 32.4	223	2 51 42.29	51 44.50	15 10 26.3	10 34.7	8.1116	8.6907	3.21	3.89
11 17 28.7	224	2 52 0.56	52 2.69	15 11 35.4	11 43.4	8.0951	8.6706	3.22	3.89
12 17 25.1	225	2 52 18.14	52 20.19	15 12 41.3	12 48.9	8.0778	8.6494	3.22	3.89
13 17 21.4	226	2 52 35.01	52 36.99	15 13 43.9	13 51.2	8.0597	8.6271	3.23	3.89
14 17 17.8	227	2 52 51.17	52 53.08	15 14 43.3	14 50.3	8.0407	8.6034	3.23	3.89
15 17 14.1	228	2 53 6.63	53 8.45	15 15 39.5	15 46.1	8.0207	8.5782	3.24	3.89
16 17 10.4	229	2 53 21.37	53 23.11	15 16 32.4	16 38.6	7.9995	8.5511	3.24	3.90
17 17 6.7	230	2 53 35.39	53 37.04	15 17 22.0	17 27.9	7.9770	8.5224	3.24	3.90
18 17 3.0	231	2 53 48.67	53 50.23	15 18 8.3	18 13.8	7.9530	8.4914	3.25	3.90
19 16 59.3	232	2 54 1.22	54 2.69	15 18 51.3	18 56.4	7.9274	8.4581	3.25	3.90
20 16 55.6	233	2 54 13.03	54 14.41	15 19 31.0	19 35.7	7.8997	8.4218	3.25	3.90
21 16 51.8	234	2 54 24.08	54 25.37	15 20 7.4	20 11.7	7.8702	8.3820	3.26	3.90
22 16 48.1	235	2 54 34.37	54 35.57	15 20 40.5	20 44.4	7.8383	8.3381	3.26	3.91
23 16 44.3	236	2 54 43 91	54 45.02	15 21 10.2	21 13.7	7.8036	8.2896	3.26	3.91
24 16 40.5	237	2 54 52.68	54 53.70	15 21 36.6	21 39.7	7.7653	8.2343	3.26	3.91
25 16 36.7	238	2 55 0.68	55 1.61	15 21 59.7	22 2.4	7.7235	8.1710	3.27	3.91
26 16 32.9	239	2 55 7.92	55 8.76	15 22 19.4	22 21.7	7.6771	8.0969	3.27	3.91
27 16 29.1	240	2 55 14.39	55 15.13	15 22 35.7	22 37.6	7.6255	8.0075	3.27	3.91
28 16 25.3	241	2 55 20.08	55 20.73	15 22 48.7	22 50.1	7.5663	7.8947	3.27	3.91
29 16 21.4	242	2 55 25.00	55 25.55	15 22 58.3	22 59.3	7.4977	7.7420	3.27	3.91
30 16 17.5	243	2 55 29.14	55 29.59	15 23 4.6	23 5.2	7.4151	7.5044	3.28	3.91
31 16 13.6	244	2 55 32.49	55 32.85	+15 23 7.6	23 7.8	+7.3129	+6.9385	−3.28	−3.91

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Sept. 1 16 9.7	245	2 55 35.06	55 35.33	+15 23 7.2	23 7.0	+7.1791	−7.1638	−3.28	−3.91
2 16 5.8	246	2 55 36.84	55 37.02	15 23 3.5	23 2.9	6.9846	7.5740	3.28	3.91
3 16 1.9	247	2 55 37.84	55 37.91	15 22 56.5	22 55.5	+6.6198	7.7836	3.28	3.91
4 15 58.0	248	2 55 38 04	55 38.01	15 22 46.1	22 44.7	−6.1317	7.9244	3.28	3.91
5 15 54.1	249	2 55 37.45	55 37.32	15 22 32.4	22 30.5	6.8373	8.0306	3.28	3.91
6 15 50.1	250	2 55 36.07	55 35.84	15 22 15.3	22 13.0	7.0933	8.1158	3.28	3.91
7 15 46.2	251	2 55 33.90	55 33.57	15 21 54.9	21 52.1	7.2532	8.1870	3.28	3.91
8 15 42.2	252	2 55 30.94	55 30.52	15 21 31.1	21 27.9	7.3699	8.2482	3.28	3.91
9 15 38.2	253	2 55 27.18	55 26.67	15 21 3.9	21 0.3	7.4618	8.3020	3.28	3.91
10 15 34.2	254	2 55 22.62	55 22.01	15 20 33.4	20 29.4	7.5375	8.3502	3.28	3.91
11 15 30.2	255	2 55 17.26	55 16.55	15 19 59.5	19 55.1	7.6020	8.3936	3.28	3.91
12 15 26.1	256	2 55 11.10	55 10.30	15 19 22.2	19 17.4	7.6582	8.4327	3.28	3.91
13 15 22.1	257	2 55 4.15	55 3.25	15 18 41.6	18 36.4	7.7081	8.4684	3.28	3.90
14 15 18.0	258	2 54 56.40	54 55.40	15 17 57.6	17 52.0	7.7525	8.5008	3.27	3.90
15 15 13.9	259	2 54 47.86	54 46.76	15 17 10.3	17 4.4	7.7923	8.5307	3.27	3.90
16 15 9.8	260	2 54 38.54	54 37.35	15 16 19.8	16 13.5	7.8286	8.5588	3.27	3.90
17 15 5.7	261	2 54 28.44	54 27.16	15 15 26.0	15 19.3	7.8619	8.5852	3.27	3.89
18 15 1.6	262	2 54 17.56	54 16.19	15 14 28.9	14 21.8	7.8929	8.6099	3.26	3.89
19 14 57.5	263	2 54 5.91	54 4.45	15 13 28.6	13 21.1	7.9217	8.6332	3.26	3.89
20 14 53.3	264	2 53 53.49	53 51.94	15 12 25.0	12 17.1	7.9485	8.6551	3.26	3.88
21 14 49.2	265	2 53 40.32	53 38.68	15 11 18.3	11 10.0	7.9735	8.6757	3.25	3.88
22 14 45.0	266	2 53 26.40	53 24.67	15 10 8.5	9 59.8	7.9968	8.6953	3.25	3.87
23 14 40.8	267	2 53 11.74	53 9.92	15 8 55.5	8 46.5	8.0187	8.7137	3.25	3.87
24 14 36.6	268	2 52 56.34	52 54.44	15 7 39.5	7 30.1	8.0392	8.7312	3.24	3.86
25 14 32.4	269	2 52 40.22	52 38.23	15 6 20.4	6 10.7	8.0585	8.7477	3.24	3.86
26 14 28.2	270	2 52 23.39	52 21.31	15 4 58.4	4 48.3	8.0768	8.7634	3.23	3.85
27 14 24.0	271	2 52 5.85	52 3.69	15 3 33.4	3 23.0	8.0942	8.7783	3.23	3.85
28 14 19.8	272	2 51 47.62	51 45.38	15 2 5.5	1 54.8	8.1106	8.7925	3.22	3.84
29 14 15.6	273	2 51 28.70	51 26.39	15 0 34.8	0 23.8	8.1261	8.8061	3.21	3.84
30 14 11.3	274	2 51 9.12	51 6.74	14 59 1.2	58 49.9	8.1407	8.8192	3.20	3.83
Oct. 1 14 7.0	275	2 50 48.88	50 46.43	14 57 24.8	57 13.2	8.1545	8.8317	3.19	3.82
2 14 2.7	276	2 50 28.01	50 25.49	14 55 45.7	55 33.8	8.1677	8.8437	3.18	3.81
3 13 58.4	277	2 50 6.51	50 3.92	14 54 3.9	53 51.7	8.1803	8.8551	3.18	3.81
4 13 54.1	278	2 49 44.38	49 41.73	14 52 19.4	52 6.9	8.1923	8.8659	3.17	3.80
5 13 49.8	279	2 49 21.64	49 18.93	14 50 32.4	50 19.6	8.2039	8.8761	3.16	3.79
6 13 45.5	280	2 48 58.31	48 55.54	14 48 42.8	48 29.8	8.2149	8.8860	3.15	3.78
7 13 41.2	281	2 48 34.39	48 31.56	14 46 50.8	46 37.5	8.2255	8.8955	3.14	3.77
8 13 36.8	282	2 48 9.90	48 7.01	14 44 56.3	44 42.8	8.2355	8.9046	3.13	3.76
9 13 32.5	283	2 47 44.85	47 41.91	14 42 59.4	42 45.7	8.2450	8.9133	3.12	3.75
10 13 28.1	284	2 47 19.27	47 16.28	14 41 0.3	40 46.3	8.2539	8.9216	3.10	3.73
11 13 23.8	285	2 46 53.18	46 50.14	14 38 59.0	38 44.7	8.2623	8.9295	3.08	3.72
12 13 19.4	286	2 46 26.59	46 23.50	14 36 55.5	36 41.0	8.2702	8.9370	3.06	3.70
13 13 15.0	287	2 45 59.53	45 56.39	14 34 49.9	34 35.2	8.2777	8.9441	3.04	3.68
14 13 10.6	288	2 45 32.00	45 28.81	14 32 42.3	32 27.4	8.2849	8.9508	3.02	3.66
15 13 6.2	289	2 45 4.03	45 0.80	14 30 32.8	30 17.7	8.2916	8.9571	3.00	3.64
16 13 1.8	290	2 44 35.64	44 32.37	14 28 21.5	28 6.2	8.2979	8.9629	2.98	3.62
17 12 57.4	291	2 44 6.85	44 3.55	14 26 8.5	25 53.1	8.3038	8.9683	2.96	3.59
18 12 53.0	292	2 43 37.68	43 34.35	14 23 53.9	23 38.4	8.3092	8.9733	2.93	3.56
19 12 48.6	293	2 43 8.16	43 4.80	14 21 37.8	21 22.2	8.3142	8.9779	2.90	3.53
20 12 44.2	294	2 42 38.31	42 34.92	14 19 20.2	19 4.5	8.3188	8.9821	2.87	3.50
21 12 39.8	295	2 42 8.16	42 4.74	14 17 1.3	16 45.6	8.3230	8.9860	2.84	3.46
22 12 35.3	296	2 41 37.72	41 34.28	14 14 41.3	14 25.5	8.3269	8.9896	2.80	3.42
23 12 30.9	297	2 41 7.02	41 3.56	14 12 20.2	12 4.3	8.3304	8.9929	2.76	3.38
24 12 26.4	298	2 40 36 08	40 32.61	14 9 58.0	9 42.1	8.3335	8.9959	2.71	3.33
25 12 22.0	299	2 40 4.94	40 1.46	14 7 34.9	7 19.0	8.3363	8.9984	2.66	3.27
26 12 17.5	300	2 39 33.61	39 30.12	14 5 11.1	4 55.1	8.3387	9.0006	−2.59	−3.21
27 12 13.1	301	2 39 2.11	38 58.62	14 2 46.6	2 30.6	8.3408	9.0024		
28 12 8.6	302	2 38 30.48	38 26.99	14 0 21.5	0 5.6	8.3426	9.0039		
29 12 4.2	303	2 37 58.73	37 55.24	13 57 56.0	57 40.1	8.3440	9.0052		
30 11 59.7	304	2 37 26.89	37 23.40	13 55 30.1	55 14.2	8.3451	9.0061		
31 11 55.3	305	2 36 54.98	36 51.50	13 53 4.0	52 48.1	8.3459	9.0066		
32 11 50.8	306	2 36 23.02	36 19.55	+13 50 37.7	50 21.9	−8.3464	−9.0069		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Nov. 1 11 50.8	306	2 36 23.02	36 19.55	+13 50 37.7	50 21.9	−8.3464	−9.0069		
2 11 46.3	307	2 35 51.04	35 47.58	13 48 11.4	47 55.7	8.3466	9.0067		
3 11 41.8	308	2 35 19.06	35 15.61	13 45 45.2	45 29.5	8.3464	9.0063		
4 11 37.4	309	2 34 47.10	34 43.67	13 43 19.2	43 3.5	8.3459	9.0056		
5 11 32.9	310	2 34 15.20	34 11.79	13 40 53.5	40 37.9	8.3450	9.0046		
6 11 28.4	311	2 33 43.37	33 39.98	13 38 28.2	38 12.7	8.3438	9.0033		
7 11 23.9	312	2 33 11.64	33 8.27	13 36 3.4	35 48.0	8.3423	9.0015	+2.47	+3.19
8 11 19.4	313	2 32 40.03	32 36.69	13 33 39.3	33 24.0	8.3405	8.9994	2.54	3.26
9 11 15.0	314	2 32 8.57	32 5.26	13 31 15.9	31 0.7	8.3383	8.9968	2.61	3.33
10 11 10.5	315	2 31 37.28	31 34.00	13 28 53.4	28 38.4	8.3358	8.9938	2.67	3.39
11 11 6.1	316	2 31 6.18	31 2.93	13 26 32.0	26 17.2	8.3329	8.9904	2.72	3.44
12 11 1.6	317	2 30 35.30	30 32.09	13 24 11.7	23 57.1	8.3296	8.9867	2.77	3.48
13 10 57.2	318	2 30 4.66	30 1.49	13 21 52.7	21 38.3	8.3260	8.9826	2.81	3.52
14 10 52.8	319	2 29 34.29	29 31.16	13 19 35.1	19 20.9	8.3220	8.9782	2.85	3.56
15 10 48.4	320	2 29 4.21	29 1.12	13 17 18.9	17 4.9	8.3176	8.9733	2.88	3.59
16 10 43.9	321	2 28 34.44	28 31.39	13 15 4.4	14 50.6	8.3129	8.9678	2.91	3.62
17 10 39.5	322	2 28 5.01	28 2.00	13 12 51.6	12 38.0	8.3078	8.9617	2.94	3.65
18 10 35.1	323	2 27 35.94	27 32.98	13 10 40.7	10 27.3	8.3023	8.9551	2.97	3.68
19 10 30.7	324	2 27 7.26	27 4.35	13 8 31.9	8 18.7	8.2963	8.9481	2.99	3.70
20 10 26.3	325	2 26 38.98	26 36.12	13 6 25.2	6 12.2	8.2900	8.9408	3.01	3.72
21 10 21.9	326	2 26 11.13	26 8.32	13 4 20.6	4 7.9	8.2829	8.9331	3.03	3.74
22 10 17.5	327	2 25 43.73	25 40.97	13 2 18.3	2 5.9	8.2756	8.9249	3.05	3.76
23 10 13.1	328	2 25 16.79	25 14.09	13 0 18.4	0 6.3	8.2682	8.9162	3.07	3.78
24 10 8.7	329	2 24 50.34	24 47.70	12 58 20.9	58 9.2	8.2599	8.9069	3.09	3.80
25 10 4.4	330	2 24 24.39	24 21.81	12 56 26.1	56 14.7	8.2512	8.8970	3.11	3.82
26 10 0.0	331	2 23 58.97	23 56.45	12 54 34.0	54 22.9	8.2422	8.8865	3.12	3.83
27 9 55.7	332	2 23 34.09	23 31.63	12 52 44.6	52 33.8	8.2327	8.8753	3.13	3.84
28 9 51.3	333	2 23 9.76	23 7.36	12 50 58.0	50 47.6	8.2228	8.8634	3.14	3.85
29 9 47.0	334	2 22 46.00	22 43.66	12 49 14.4	49 4.3	8.2123	8.8508	3.15	3.86
30 9 42.7	335	2 22 22.82	22 20.55	12 47 33.8	47 24.0	8.2013	8.8376	3.16	3.87
Dec. 1 9 38.4	336	2 22 0.24	21 58.04	12 45 56.3	45 46.8	8.1896	8.8236	3.17	3.88
2 9 34 1	337	2 21 38.27	21 36.14	12 44 21.9	44 12.8	8.1774	8.8089	3.18	3.89
3 9 29.8	338	2 21 16.92	21 14.86	12 42 50.8	42 42.1	8.1645	8.7933	3.19	3.90
4 9 25.5	339	2 20 56.21	20 54.22	12 41 23.0	41 14.6	8.1511	8.7769	3.20	3.91
5 9 21.3	340	2 20 36.14	20 34.22	12 39 58.5	39 50.5	8.1370	8.7594	3.20	3.92
6 9 17.0	341	2 20 16.73	20 14.88	12 38 37.4	38 29.8	8.1221	8.7407	3.21	3.93
7 9 12.8	342	2 19 58.00	19 56.22	12 37 19.9	37 12.6	8.1063	8.7210	3.22	3.94
8 9 8.5	343	2 19 39.95	19 38.24	12 36 5.9	35 59.0	8.0898	8.7000	3.23	3.95
9 9 4.3	344	2 19 22.60	19 20.96	12 34 55.6	34 49.0	8.0722	8.6776	3.23	3.95
10 9 0.1	345	2 19 5.95	19 4.38	12 33 48.9	33 42.7	8.0536	8.6535	3.24	3.96
11 8 55.9	346	2 18 50.03	18 48.53	12 32 46.0	32 40.1	8.0338	8.6273	3.25	3.96
12 8 51.7	347	2 18 34.84	18 33.41	12 31 46.9	31 41.3	8.0128	8.5990	3.26	3.97
13 8 47.6	348	2 18 20.39	18 19.03	12 30 51.6	30 46.4	7.9904	8.5684	3.26	3.97
14 8 43.4	349	2 18 6.68	18 5.40	12 30 0.2	29 55.4	7.9665	8.5352	3.26	3.98
15 8 39.3	350	2 17 53.74	17 52.54	12 29 12.8	29 8.4	7.9410	8.4992	3.27	3.98
16 8 35.1	351	2 17 41.56	17 40.44	12 28 29.3	28 25.3	7.9185	8.4595	3.27	3.99
17 8 31.0	352	2 17 30.15	17 29.10	12 27 49.8	27 46.2	7.8840	8.4157	3.27	3.99
18 8 26.9	353	2 17 19.51	17 18.53	12 27 14.3	27 11.1	7.8521	8.3654	3.27	3.99
19 8 22.8	354	2 17 9.66	17 8.75	12 26 42.9	26 40.1	7.8176	8.3092	3.28	3.99
20 8 18.7	355	2 17 0.59	16 59.76	12 26 15.6	26 13.2	7.7798	8.2439	3.28	4.00
21 8 14.7	356	2 16 52.32	16 51.56	12 25 52.4	25 50.4	7.7382	8.1669	3.28	4.00
22 8 10.6	357	2 16 44.84	16 44.16	12 25 33.3	25 31.7	7.6916	8.0727	3.28	4.00
23 8 6.6	358	2 16 38.16	16 37.56	12 25 18.3	25 17.1	7.6394	7.9522	3.28	4.00
24 8 2.6	359	2 16 32 28	16 31.76	12 25 7.5	25 6.7	7.5800	7.7836	3.29	4.00
25 7 58.6	360	2 16 27.20	16 26.76	12 25 0.8	25 0.4	7.5114	7.5044	3.29	4.00
26 7 54.6	361	2 16 22.92	16 22.55	12 24 58.2	24 58.2	7.4299	−6.5183	3.29	4.00
27 7 50.6	362	2 16 19.44	16 19.15	12 24 59.8	25 0.2	7.3295	+7.4039	3.29	4.00
28 7 46.6	363	2 16 16.77	16 16.55	12 25 5.5	25 6.3	7.1986	7.7323	3.29	4.00
29 7 42.7	364	2 16 14.90	16 14.76	12 25 15.3	25 16.5	7.0104	7.9172	3.29	4.00
30 7 38.7	365	2 16 13.83	16 13.76	12 25 29.3	25 30.9	−6.6709	8.0457	3.29	4.00
31 7 34.8	366	2 16 13.55	16 13.56	12 25 47.3	25 49.3	5.9385	8.1448	3.29	4.00
32 7 30.8	367	2 16 14.05	16 14.13	+12 26 9.4	26 11.8	+6.7910	+8.2246	+3.29	+4.00

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Jan. 0 12 3.5	0	6 46 42.23	46 36.21	+22 27 29.8	27 38.4	−8.1704	+ 8.326		−2.68
1 11 59.3	1	6 46 20.91	46 14.90	22 28 0.2	28 8.8	8.1703	8.323		2.71
2 11 55.0	2	6 45 59.60	45 53.60	22 28 30.4	28 38.9	8.1699	8.320	+1.68	2.73
3 11 50.7	3	6 45 38.32	45 32.33	22 29 0.4	29 8.9	8.1693	8.318	1.93	2.75
4 11 46.5	4	6 45 17.07	45 11.10	22 29 30.3	29 38.7	8.1686	8.316	2.06	2.76
5 11 42.1	5	6 44 55.86	44 49.91	22 30 0.1	30 8.4	8.1676	8.314	2.16	2.77
6 11 37.9	6	6 44 34.71	44 28.78	22 30 29.7	30 37.9	8.1662	8.311	2.24	2.78
7 11 33.6	7	6 44 13.63	44 7.73	22 30 59.0	31 7.2	8.1646	8.308	2.31	2.79
8 11 29.3	8	6 43 52.64	43 46.77	22 31 28.1	31 36.3	8.1626	8.305	2.37	2.80
9 11 25.0	9	6 43 31.75	43 25.91	22 31 57.1	32 5.2	8.1605	8.302	2.42	2.80
10 11 20.7	10	6 43 10.96	43 5.16	22 32 25.9	32 33.9	8.1582	8.299	2.46	2.81
11 11 16.5	11	6 42 50.29	42 44.53	22 32 54.5	33 2.5	8.1556	8.296	2.50	2.82
12 11 12.2	12	6 42 29.75	42 24.03	22 33 22.9	33 30.8	8.1529	8.293	2.53	2.83
13 11 7.9	13	6 42 9.34	42 3.67	22 33 51.0	33 58.8	8.1498	8.289	2.56	2.84
14 11 3.6	14	6 41 49.09	41 43.47	22 34 18.9	34 26.6	8.1464	8.285	2.59	2.85
15 10 59.3	15	6 41 29.00	41 23.43	22 34 46.5	34 54.1	8.1428	8.279	2.61	2.85
16 10 55.1	16	6 41 9.08	41 3.56	22 35 13.7	35 21.3	8.1389	8.274	2.64	2.86
17 10 50.8	17	6 40 49.35	40 43.89	22 35 40.6	35 48.1	8.1346	8.270	2.67	2.87
18 10 46.5	18	6 40 29.82	40 24.42	22 36 7.3	36 14.7	8.1301	8.266	2.69	2.88
19 10 42.3	19	6 40 10.49	40 5.15	22 36 33.8	36 41.1	8.1254	8.262	2.72	2.89
20 10 38.0	20	6 39 51.38	39 46.11	22 37 0.0	37 7.2	8.1203	8.257	2.74	2.89
21 10 33.7	21	6 39 32.50	39 27.30	22 37 25.8	37 32.9	8.1149	8.251	2.76	2.90
22 10 29.5	22	6 39 13.86	39 8.73	22 37 51.3	37 58.3	8.1092	8.246	2.78	2.91
23 10 25.2	23	6 38 55.47	38 50.42	22 38 16.5	38 23.4	8.1030	8.241	2.80	2.92
24 10 21.0	24	6 38 37.35	38 32.38	22 38 41.5	38 48.3	8.0966	8.236	2.82	2.93
25 10 16.8	25	6 38 19.50	38 14.61	22 39 6.1	39 12.8	8.0897	8.229	2.83	2.94
26 10 12.6	26	6 38 1.94	37 57.14	22 39 30.3	39 36.9	8.0826	8.222	2.85	2.95
27 10 8.4	27	6 37 44.67	37 39.96	22 39 54.1	40 0.6	8.0750	8.215	2.87	2.96
28 10 4.2	28	6 37 27.71	37 23.09	22 40 17.6	40 24.0	8.0670	8.209	2.88	2.97
29 10 0.0	29	6 37 11.07	37 6.54	22 40 40.7	40 47.0	8.0586	8.202	2.89	2.98
30 9 55.8	30	6 36 54.75	36 50.31	22 41 3.4	41 9.6	8.0500	8.195	2.90	2.98
31 9 51.6	31	6 36 38.76	36 34.42	22 41 25.8	41 31.9	8.0409	8.188	2.91	2.99
Feb. 1 9 47.4	32	6 36 23.11	36 18.87	22 41 47.8	41 53.8	8.0313	8.181	2.92	2.99
2 9 43.2	33	6 36 7.81	36 3.67	22 42 9.5	42 15.4	8.0212	8.175	2.93	2.99
3 9 39.1	34	6 35 52.87	35 48.83	22 42 30.9	42 36.7	8.0107	8.169	2.94	3.00
4 9 34.9	35	6 35 38.29	35 34.35	22 42 52.0	42 57.7	7.9997	8.161	2.95	3.00
5 9 30.7	36	6 35 24.09	35 20.25	22 43 12.6	43 18.2	7.9882	8.152	2.96	3.00
6 9 26.5	37	6 35 10.26	35 6.53	22 43 32.8	43 38.3	7.9765	8.144	2.96	3.00
7 9 22.4	38	6 34 56.81	34 53.19	22 43 52.7	43 58.1	7.9640	8.136	2.97	3.00
8 9 18.2	39	6 34 43.75	34 40.24	22 44 12.2	44 17.5	7.9511	8.128	2.98	3.00
9 9 14.1	40	6 34 31.08	34 27.68	22 44 31.4	44 36.5	7.9375	8.120	2.98	3.01
10 9 9.9	41	6 34 18.81	34 15.52	22 44 50.2	44 55.2	7.9232	8.110	2.99	3.01
11 9 5.8	42	6 34 6.95	34 3.77	22 45 8.5	45 13.4	7.9080	8.100	2.99	3.01
12 9 1.7	43	6 33 55.51	33 52.45	22 45 26.4	45 31.2	7.8920	8.091	3.00	3.01
13 8 57.6	44	6 33 74.49	33 41.55	22 45 44.0	45 48.7	7.8755	8.082	3.00	3.01
14 8 53.5	45	6 33 33.89	33 31.07	22 46 1.2	46 5.8	7.8581	8.072	3.01	3.01
15 8 49.3	46	6 33 23.72	33 21.02	22 46 18.0	46 22.5	7.8397	8.062	3.01	3.01
16 8 45.2	47	6 33 13.98	33 11.40	22 46 34.4	46 38.8	7.8203	8.053	3.02	3.02
17 8 41.1	48	6 33 4.68	33 2.22	22 46 50.5	46 54.8	7.7995	8.044	3.02	3.02
18 8 37.0	49	6 32 55.83	32 53.49	22 47 6.3	47 10.5	7.7774	8.034	3.03	3.02
19 8 33.0	50	6 32 47.43	32 45.22	22 47 21.7	47 25.8	7.7541	8.023	3.03	3.02
20 8 28.9	51	6 32 39.48	32 37.39	22 47 36.7	47 40.7	7.7293	8.013	3.03	3.02
21 8 24.9	52	6 32 31.99	32 30.03	22 47 51.4	47 55.3	7.7026	8.003	3.04	3.03
22 8 20.9	53	6 32 24.96	32 23.12	22 48 5.7	48 9.5	7.6738	7.991	3.04	3.03
23 8 16.8	54	6 32 18.40	32 16.69	22 48 19.6	48 23.3	7.6427	7.978	3.04	3.03
24 8 12.8	55	6 32 12.31	32 10.73	22 48 33.1	48 36.7	7.6092	7.967	3.05	3.03
25 8 8.8	56	6 32 6.69	32 5.24	22 48 46.3	48 49.8	7.5724	7.955	3.05	3.03
26 8 4.8	57	6 32 1.55	32 0.23	22 48 59.1	49 2.5	7.5319	7.940	3.05	3.04
27 8 0.8	58	6 31 56.89	31 55.70	22 49 11.4	49 14.7	7.4876	7.926	3.06	3.04
28 7 56.8	59	6 31 52.70	31 51.64	22 49 23.4	49 26.6	7.4388	7.914	3.06	3.04
29 7 52.8	60	6 31 48.98	31 48.05	22 49 35.1	49 38.2	7.3832	7.900	3.06	3.04
30 7 48.8	61	6 31 45.74	31 44.94	+22 49 46.3	49 49.3	−7.3181	+ 7.883	+3.06	−3.04

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Mar. 1 7 52.8	60	6 31 48.98	31 48.05	+22 49 35.1	49 38.2	−7.3832	+ 7.900	+3.06	−3.04
2 7 48.8	61	6 31 45.74	31 44.94	22 49 46.3	49 49.3	7.3181	7.883	3.06	3.04
3 7 44.8	62	6 31 42.99	31 42.32	22 49 57.1	50 0.0	7.2413	7.867	3.07	3.05
4 7 40.8	63	6 31 40.72	31 40.18	22 50 7.5	50 10.3	7.1481	7.852	3.07	3.05
5 7 36.9	64	6 31 38.94	31 38.53	22 50 17.6	50 20.3	7.0278	7.836	3.07	3.05
6 7 32.9	65	6 31 37.65	31 37.37	22 50 27.3	50 29.9	6.8628	7.817	3.07	3.05
7 7 28.9	66	6 31 36.84	31 36.70	22 50 36.5	50 39.0	6.5975	7.798	3.07	3.05
8 7 25.0	67	6 31 36.51	31 36.51	22 50 45.4	50 47.8	−5.7959	7.781	3.07	3.06
9 7 21.1	68	6 31 36.66	31 36.79	22 50 53.9	50 56.2	+6.4382	7.763	3.07	3.06
10 7 17.2	69	6 31 37.30	31 37.56	22 51 2.1	51 4.3	6.7861	7.743	3.06	3.06
11 7 13.3	70	6 31 38.42	31 38.81	22 51 9.9	51 12.0	6.9752	7.719	3.06	3.06
12 7 9.4	71	6 31 40.02	31 40.54	22 51 17.2	51 19.2	7.1065	7.696	3.06	3.06
13 7 5.5	72	6 31 42.10	31 42.75	22 51 24.2	51 26.1	7.2071	7.674	3.06	3.06
14 7 1.6	73	6 31 44.66	31 45.44	22 51 30.8	51 32.6	7.2896	7.651	3.06	3.07
15 6 57.7	74	6 31 47.71	31 48.62	22 51 37.1	51 38.8	7.3582	7.627	3.06	3.07
16 6 53.9	75	6 31 51.23	31 52.27	22 51 43.0	51 44.5	7.4163	7.594	3.06	3.07
17 6 50.0	76	6 31 55.22	31 56.39	22 51 48.4	51 49.8	7.4685	7.558	3.06	3.07
18 6 46.1	77	6 31 59.70	32 1.00	22 51 53.4	51 54.7	7.5151	7.527	3.06	3.07
19 6 42.3	78	6 32 4.65	32 6.08	22 51 58.1	51 59.3	7.5568	7.495	3.05	3.07
20 6 38.4	79	6 32 10.08	32 11.64	22 52 2.4	52 3.5	7.5952	7.460	3.05	3.07
21 6 34.6	80	6 32 15.99	32 17.68	22 52 6.4	52 7.4	7.6298	7.416	3.05	3.07
22 6 30.8	81	6 32 22.36	32 24.18	22 52 9.9	52 10.8	7.6615	7.353	3.05	3.07
23 6 27.0	82	6 32 29.20	32 31.15	22 52 12.9	52 13.7	7.6917	7.289	3.05	3.07
24 6 23.2	83	6 32 36.52	32 38.60	22 52 15.5	52 16.2	7.7199	7.222	3.04	3.07
25 6 19.4	84	6 32 44.31	32 46.52	22 52 17.7	52 18.3	7.7458	7.153	3.04	3.07
26 6 15.6	85	6 32 52.56	32 54.89	22 52 19.6	52 20.1	7.7700	7.059	3.04	3.07
27 6 11.8	86	6 33 1.27	33 3.73	22 52 21.0	52 21.4	7.7932	6.921	3.04	3.07
28 6 8.0	87	6 33 10.45	33 13.03	22 52 22.0	52 22.3	7.8150	6.745	3.03	3.08
29 6 4.2	88	6 33 20.08	33 22.79	22 52 22.6	52 22.7	7.8353	+ 6.386	3.03	3.08
30 6 0.4	89	6 33 30.16	33 33.00	22 52 22.7	52 22.7	7.8547	− 5.842	3.03	3.08
31 5 56.7	90	6 33 40.69	33 43.65	22 52 22.4	52 22.3	7.8731	6.582	3.02	3.08
Apr. 1 5 52.9	91	6 33 51.66	33 54.74	22 52 21.6	52 21.4	7.8905	6.863	3.02	3.08
2 5 49.2	92	6 34 3.07	34 6.28	22 52 20.3	52 20.0	7.9074	7.018	3.02	3.08
3 5 45.5	93	6 34 14.93	34 18.26	22 52 18.6	52 18.2	7.9235	7.120	3.01	3.09
4 5 41.7	94	6 34 27.22	34 30.67	22 52 16.5	52 16.0	7.9388	7.203	3.01	3.09
5 5 38.0	95	6 34 39.94	34 43.51	22 52 14.0	52 13.3	7.9534	7.281	3.00	3.09
6 5 34.3	96	6 34 53.09	34 56.78	22 52 11.0	52 10.2	7.9675	7.353	3.00	3.09
7 5 30.6	97	6 35 6.66	35 10.47	22 52 7.5	52 6.6	7.9809	7.410	3.00	3.09
8 5 26.9	98	6 35 20.65	35 24.57	22 52 3.6	52 2.5	7.9938	7.460	2.99	3.10
9 5 23.2	99	6 35 35.05	35 39.09	22 51 59.2	51 57.9	8.0062	7.509	2.99	3.10
10 5 19.5	100	6 35 49.86	35 54.01	22 51 54.3	51 52.9	8.0180	7.553	2.98	3.10
11 5 15.8	101	6 36 5.07	36 9.34	22 51 48.9	51 47.4	8.0296	7.594	2.98	3.10
12 5 12.2	102	6 36 20.69	36 25.07	22 51 43.0	51 41.4	8.0409	7.627	2.98	3.11
13 5 8.5	103	6 36 36.71	36 41.20	22 51 36.7	51 34.9	8.0517	7.658	2.97	3.11
14 5 4.8	104	6 36 53.13	36 57.73	22 51 29.9	51 28.0	8.0621	7.690	2.97	3.11
15 5 1.2	105	6 37 9.94	37 14.65	22 51 22.6	51 20.5	8.0722	7.722	2.97	3.11
16 4 57.6	106	6 37 27.14	37 31.96	22 51 14.7	51 12.5	8.0821	7.750	2.96	3.12
17 4 53.9	107	6 37 44.73	37 49.66	22 51 6.4	51 4.0	8.0916	7.774	2.96	3.12
18 4 50.3	108	6 38 2.70	38 7.74	22 50 57.6	50 55.1	8.1008	7.798	2.96	3.12
19 4 46.7	109	6 38 21.05	38 26.20	22 50 48.3	50 45.7	8.1096	7.822	2.95	3.12
20 4 43.1	110	6 38 39.77	38 45.02	22 50 38.5	50 35.8	8.1182	7.844	2.95	3.12
21 4 39.5	111	6 38 58.86	39 4.21	22 50 28.2	50 25.3	8.1264	7.867	2.94	3.13
22 4 35.9	112	6 39 18.31	39 23.77	22 50 17.3	50 14.3	8.1347	7.889	2.94	3.13
23 4 32.3	113	6 39 38.13	39 43.69	22 50 5.9	50 2.8	8.1426	7.908	2.93	3.13
24 4 28.7	114	6 39 58.30	40 3.97	22 49 54.0	49 50.7	8.1502	7.926	2.93	3.14
25 4 25.1	115	6 40 18.83	40 24.60	22 49 41.6	49 38.1	8.1576	7.945	2.92	3.14
26 4 21.5	116	6 40 39.70	40 45.57	22 49 28.6	49 25.0	8.1647	7.964	2.92	3.14
27 4 17.9	117	6 41 0.91	41 6.88	22 49 15.1	49 11.3	8.1717	7.981	2.91	3.14
28 4 14.3	118	6 41 22.46	41 28.53	22 49 1.0	48 57.1	8.1784	7.998	2.91	3.14
29 4 10.7	119	6 41 44.34	41 50.51	22 48 46.4	48 42.3	8.1850	8.013	2.90	3.15
30 4 7.2	120	6 42 6.55	42 12.81	22 48 31.3	48 27.0	8.1913	8.030	2.89	3.15
31 4 3.7	121	6 42 29.08	42 35.43	+22 48 15.5	48 11.1	+8.1975	− 8.048	+2.89	−3.15

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
May 1 4 3.7	121	6 42 29.08	42 35.43	+22 48 15.5	48 11.1	+8.1975	− 8.048	+2.89	−3.15
2 4 0.2	122	6 42 51.93	42 58.38	22 47 59.1	47 54.5	8.2035	8.064	2.88	3.15
3 3 56.6	123	6 43 15.09	43 21.63	22 47 42.1	47 37.4	8.2092	8.078	2.87	3.15
4 3 53.1	124	6 43 38.55	43 45.18	22 47 24.6	47 19.7	8.2147	8.091	2.86	3.15
5 3 49.6	125	6 44 2.31	44 9.03	22 47 6.6	47 1.5	8.2201	8.105	2.85	3.15
6 3 46.0	126	6 44 26.36	44 33.17	22 46 47.9	46 42.7	8.2255	8.120	2.85	3.16
7 3 42.5	127	6 44 50.71	44 57.61	22 46 28.6	46 23.2	8.2307	8.133	2.84	3.16
8 3 39.0	128	6 45 15.35	45 22.34	22 46 8.8	46 3.2	8.2357	8.145	2.83	3.16
9 3 35.4	129	6 45 40.27	45 47.35	22 45 48.4	45 42.6	8.2405	8.158	2.82	3.16
10 3 31.9	130	6 46 5.46	46 12.62	22 45 27.4	45 21.4	8.2452	8.170	2.81	3.16
11 3 28.4	131	6 46 30.92	46 38.16	22 45 5.8	44 59.7	8.2498	8.181	2.81	3.16
12 3 24.9	132	6 46 56 65	47 3.98	22 44 43.7	44 37.4	8.2544	8.192	2.80	3.16
13 3 21.4	133	6 47 22.65	47 30.06	22 44 21.0	44 14.5	8.2589	8.203	2.79	3.16
14 3 17.9	134	6 47 48.92	47 56.41	22 43 57.7	43 51.0	8.2632	8.214	2.79	3.16
15 3 14.4	135	6 48 15.44	48 23.01	22 43 33.8	43 27.0	8.2673	8.224	2.78	3.16
16 3 10.9	136	6 48 42.21	48 49.86	22 43 9.4	43 2.4	8.2713	8.235	2.78	3.16
17 3 7.4	137	6 49 9.23	49 16.96	22 42 44.3	42 37.1	8.2753	8.246	2.77	3.16
18 3 3.9	138	6 49 36.49	49 44.29	22 42 18.6	42 11.3	8.2791	8.257	2.76	3.16
19 3 0.4	139	6 50 3.99	50 11.87	22 41 52.3	41 44.8	8.2829	8.266	2.75	3.16
20 2 57.0	140	6 50 31.73	50 39.68	22 41 25.4	41 17.7	8.2865	8.276	2.74	3.16
21 2 53.5	141	6 50 59.70	51 7.72	22 40 57.9	40 50.0	8.2900	8.286	2.73	3.16
22 2 50.1	142	6 51 27.89	51 35.98	22 40 29.7	40 21.6	8.2934	8.296	2.72	3.16
23 2 46.6	143	6 51 56.30	52 4.46	22 40 0.9	39 52.6	8.2967	8.306	2.70	3.16
24 2 43.1	144	6 52 24.92	52 33.15	22 39 31.4	39 22.9	8.2998	8.316	2.69	3.16
25 2 39.7	145	6 52 53.74	53 2.04	22 39 1.3	38 52.6	8.3028	8.324	2.68	3.16
26 2 36.2	146	6 53 22.76	53 31.13	22 38 30.6	38 21.7	8.3058	8.333	2.67	3.16
27 2 32.8	147	6 53 51.98	54 0.41	22 37 59.3	37 50.2	8.3088	8.342	2.65	3.16
28 2 29.4	148	6 54 21.40	54 29.89	22 37 27.3	37 18.1	8.3117	8.351	2.64	3.16
29 2 25.9	149	6 54 51.01	54 59.57	22 36 54.7	36 45.4	8.3145	8.358	2.63	3.16
30 2 22.5	150	6 55 20.81	55 29.43	22 36 21.6	36 12.0	8.3171	8.366	2.61	3.16
31 2 19.1	151	6 55 50.78	55 59.46	22 35 47.8	35 38.0	8.3196	8.374	2.60	3.16
June 1 2 15.6	152	6 56 20.92	56 29.66	22 35 13.4	35 3.4	8.3220	8.383	2.59	3.16
2 2 12.2	153	6 56 51.23	57 0.03	22 34 38.3	34 28.1	8.3244	8.391	2.58	3.16
3 2 8.8	154	6 57 21.70	57 30.56	22 34 2.6	33 52.2	8.3267	8.397	2.57	3.16
4 2 5.4	155	6 57 52.33	58 1.25	22 33 26.4	33 15.8	8.3289	8.404	2.56	3.16
5 2 1.9	156	6 58 23.11	58 32.09	22 32 49.6	32 38.8	8.3310	8.412	2.55	3.16
6 1 58.5	157	6 58 54.05	59 3.08	22 32 12.1	32 1.2	8.3331	8.419	2.54	3.16
7 1 55.1	158	6 59 25.13	59 34.21	22 31 34.0	31 22.9	8.3350	8.426	2.53	3.16
8 1 51.7	159	6 59 56.34	60 5.48	22 30 55.3	30 44.0	8.3369	8.432	2.51	3.16
9 1 48.3	160	7 0 27.69	0 36.88	22 30 16.1	30 4.6	8.3388	8.438	2.50	3.15
10 1 44.9	161	7 0 59.18	1 8.42	22 29 36.4	29 24.7	8.3407	8.444	2.49	3.15
11 1 41.5	162	7 1 30.80	1 40.09	22 28 56 0	28 44.1	8.3424	8.452	2.47	3.15
12 1 38.1	163	7 2 2.54	2 11.87	22 28 14.9	28 2.8	8.3440	8.459	2.46	3.15
13 1 34.7	164	7 2 34.39	2 43.77	22 27 33.1	27 20.8	8.3456	8.466	2.44	3.14
14 1 31.3	165	7 3 6.36	3 15.78	22 26 50.7	26 38.2	8.3471	8.471	2.42	3.14
15 1 27.9	166	7 3 38.44	3 47.90	22 26 7.8	25 55.1	8.3486	8.477	2.41	3.14
16 1 24.5	167	7 4 10.63	4 20.13	22 25 24.4	25 11.5	8.3500	8.483	2.39	3.13
17 1 21.1	168	7 4 42.92	4 52.46	22 24 40.3	24 27.2	8.3514	8.489	2.38	3.13
18 1 17.7	169	7 5 15.31	5 24.89	22 23 55.6	23 42.3	8.3527	8.495	2.36	3.13
19 1 14.3	170	7 5 47.79	5 57.41	22 23 10.3	22 56.8	8.3539	8.501	2.34	3.13
20 1 10.9	171	7 6 20.36	6 30.02	22 22 24.3	22 10.6	8.3550	8.507	2.31	3.12
21 1 7.5	172	7 6 53.01	7 2.70	22 21 37.8	21 23.9	8.3560	8.511	2.28	3.12
22 1 4.1	173	7 7 25.73	7 35.46	22 20 50.8	20 36.7	8.3570	8.516	2.24	3.12
23 1 0.7	174	7 7 58.53	8 8.29	22 20 3.2	19 49.0	8.3580	8.521	2.20	3.11
24 0 57.4	175	7 8 31.41	8 41.20	22 19 15.1	19 0.7	8.3590	8.526	2.16	3.11
25 0 54.0	176	7 9 4.35	9 14.17	22 18 26.5	18 11.9	8.3597	8.531	2.13	3.10
26 0 50.6	177	7 9 37.34	9 47.19	22 17 37.3	17 22.5	8.3604	8.536	2.10	3.10
27 0 47.2	178	7 10 10.38	10 20.26	22 16 47.5	16 32.5	8.3611	8.541	2.06	3.09
28 0 43.8	179	7 10 43.48	10 53.38	22 15 57.3	15 42.1	8.3617	8.545	2.02	3.09
29 0 40.5	180	7 11 16.62	11 26.55	22 15 6.6	14 51.2	8.3623	8.549	1.98	3.08
30 0 37.1	181	7 11 49.80	11 59.76	22 14 15.3	13 59.8	8.3627	8.554	1.93	3.08
31 0 33.7	182	7 12 23.01	12 32.99	+22 13 23.5	13 7.8	+8.3631	− 8.558	+1.88	−3 07

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
July 1 0 33.7	182	7 12 23.01	12 32.99	+22 13 23.5	13 7.8	+8.3631	− 8.558	+1.88	−3.07
2 0 30.3	183	7 12 56.25	13 6.25	22 12 31.2	12 15.3	8.3635	8.562	1.82	3.07
3 0 26.9	184	7 13 29.52	13 39.54	22 11 38.4	11 22.3	8.3638	8.566	1.76	3.06
4 0 23.6	185	7 14 2.81	14 12.85	22 10 45.1	10 28.8	8.3640	8.571	+1.68	3.06
5 0 20.2	186	7 14 36.11	14 46.17	22 9 51.2	9 34.8	8.3642	8.575		3.05
6 0 16.8	187	7 15 9.42	15 19.50	22 8 56.9	8 40.3	8.3643	8.578		3.05
7 0 13.4	188	7 15 42.74	15 52.83	22 8 2.1	7 45.4	8.3643	8.582		3.04
8 0 10.0	189	7 16 16.06	16 26.16	22 7 6.8	6 50.0	8.3644	8.586		3.04
9 0 6.7	190	7 16 49.39	16 59.50	22 6 11.1	5 54.1	8.3645	8.589		3.03
10 0 3.3	191	7 17 22.72	17 32.84	22 5 15.0	4 57.8	8.3644	8.592		3.02
10 23 59.9	192	7 17 56.04	18 6.17	22 4 18.5	4 1.1	8.3642	8.596		3.01
11 23 56.5	193	7 18 29.34	18 39.48	22 3 21.5	3 4.0	8.3640	8.599		3.00
12 23 53.1	194	7 19 2.63	19 12.78	22 2 24.1	2 6.5	8.3639	8.602		2.99
13 23 49.8	195	7 19 35.91	19 46.06	22 1 26.3	1 8.5	8.3636	8.605	−1.68	2.98
14 23 46.4	196	7 20 9.16	20 19.32	22 0 28.0	0 10.1	8.3633	8.609	1.75	2.97
15 23 43.0	197	7 20 42.38	20 52.54	21 59 29.3	59 11.3	8.3629	8.612	1.81	2.96
16 23 39.6	198	7 21 15.57	21 25.73	21 58 30.2	58 12.1	8.3624	8.614	1.87	2.95
17 23 36.2	199	7 21 48.72	21 58.87	21 57 30.8	57 12.5	8.3618	8.616	1.93	2.94
18 23 32.9	200	7 22 21.82	22 31.98	21 56 31.1	56 12.6	8.3612	8.619	1.98	2.93
19 23 29.5	201	7 22 54.88	23 5.04	21 55 31.0	55 12.4	8.3606	8.622	2.04	2.92
20 23 26.1	202	7 23 27.89	23 38.04	21 54 30.6	54 11.9	8.3599	8.624	2.09	2.91
21 23 22.7	203	7 24 0.84	24 10.99	21 53 29.8	53 11.0	8.3591	8.627	2.14	2.89
22 23 19.3	204	7 24 33.73	24 43.87	21 52 28.7	52 9.8	8.3582	8.629	2.19	2.87
23 23 16.0	205	7 25 6.55	25 16.68	21 51 27.3	51 8.3	8.3573	8.631	2.23	2.85
24 23 12.6	206	7 25 39.30	25 49.42	21 50 25.6	50 6.5	8.3564	8.633	2.26	2.83
25 23 9.2	207	7 26 11.98	26 22.09	21 49 23.7	49 4.5	8.3553	8.634	2.29	2.81
26 23 5.8	208	7 26 44.57	26 54.67	21 48 21.5	48 2.2	8.3542	8.636	2.31	2.79
27 23 2.4	209	7 27 17.08	27 27.16	21 47 19 0	46 59.6	8.3530	8.638	2.33	2.77
28 22 59.0	210	7 27 49.49	27 59.55	21 46 16.3	45 56.8	8.3517	8.640	2.34	2.75
29 22 55.6	211	7 28 21.81	28 31.85	21 45 13.3	44 53.7	8.3504	8.641	2.36	2.73
30 22 52.2	212	7 28 54.03	29 4.05	21 44 10.2	43 50.5	8.3490	8.642	2.38	2.71
31 22 48.8	213	7 29 26.14	29 36.14	21 43 6.9	42 47.1	8.3476	8.644	2.39	−2.68
Aug. 1 22 45.4	214	7 29 58.15	30 8.13	21 42 3.4	41 43.5	8.3462	8.645	2.41	
2 22 42.0	215	7 30 30.05	30 40.01	21 40 59.7	40 39.7	8.3447	8.646	2.42	
3 22 38.6	216	7 31 1.84	31 11.77	21 39 55.8	39 35.7	8.3430	8.647	2.44	
4 22 35.2	217	7 31 33.50	31 43.40	21 38 51.8	38 31.6	8.3413	8.648	2.45	
5 22 31.8	218	7 32 5.04	32 14.91	21 37 47.7	37 27.5	8.3396	8.649	2.47	
6 22 28.4	219	7 32 36.45	32 46.29	21 36 43.5	36 23.3	8.3378	8.649	2.49	
7 22 25.0	220	7 33 7.73	33 17.54	21 35 39.2	35 18.9	8.3360	8.650	2.50	
8 22 21.6	221	7 33 38.88	33 48.66	21 34 34.7	34 14.4	8.3341	8.651	2.51	
9 22 18.2	222	7 34 9.89	34 19.64	21 33 30.2	33 9.8	8.3321	8.651	2.53	
10 22 14.8	223	7 34 40.75	34 50.46	21 32 25.7	32 5.2	8.3300	8.651	2.54	
11 22 11.4	224	7 35 11.46	35 21.14	21 31 21.1	31 0.6	8.3279	8.652	2.55	
12 22 8.0	225	7 35 42.02	35 51.66	21 30 16.5	29 56.0	8.3257	8.652	2.56	
13 22 4.5	226	7 36 12.43	36 22.03	21 29 11.9	28 51.4	8.3235	8.652	2.58	
14 22 1.1	227	7 36 42.68	36 52.24	21 28 7.3	27 46.8	8.3211	8.651	2.59	
15 21 57.7	228	7 37 12.76	37 22.27	21 27 2.8	26 42.3	8.3186	8.651	2.60	
16 21 54.2	229	7 37 42.66	37 52.13	21 25 58.3	25 37.8	8.3161	8.651	2.62	
17 21 50.8	230	7 38 12.39	38 21.81	21 24 53.9	24 33.4	8.3135	8.650	2.63	
18 21 47.3	231	7 38 41.94	38 51.31	21 23 49.5	23 29.0	8.3108	8.650	2.64	
19 21 43.9	232	7 39 11.30	39 20.62	21 22 45.2	22 24.7	8.3080	8.649	2.66	
20 21 40.4	233	7 39 40.47	39 49.74	21 21 41.1	21 20.6	8.3051	8.648	2.67	
21 21 37.0	234	7 40 9.44	40 18.66	21 20 37.1	20 16.6	8.3021	8.647	2.68	
22 21 33.5	235	7 40 38.21	40 47.37	21 19 33.2	19 12.8	8.2991	8.646	2.69	
23 21 30.0	236	7 41 6.78	41 15.88	21 18 29.4	18 9.1	8.2959	8.645	2.70	+2.68
24 21 26.5	237	7 41 35.13	41 44.17	21 17 25.9	17 5.6	8.2925	8.644	2.71	2.72
25 21 23.1	238	7 42 3.26	42 12.24	21 16 22.6	16 2.3	8.2892	8.642	2.72	2.76
26 21 19.7	239	7 42 31.18	42 40.10	21 15 19.5	14 59.3	8.2858	8.641	2.73	2.79
27 21 16.2	240	7 42 58.88	43 7.74	21 14 16.7	13 56.5	8.2822	8.639	2.74	2.82
28 21 12.7	241	7 43 26.34	43 35.14	21 13 14.1	12 54.0	8.2785	8.637	2.75	2.85
29 21 9.3	242	7 43 53.57	44 2.30	21 12 11.8	11 51.8	8.2748	8.635	2.76	2.88
30 21 5.8	243	7 44 20.56	44 29.22	21 11 9.9	10 49.9	8.2709	8.632	2.77	2.91
31 21 2.3	244	7 44 47.31	44 55.90	+21 10 8.3	9 48.4	+8.2670	− 8.630	−2.77	+2.94

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Sept. 1 20 58.8	245	7 45 13.82	45 22.34	+21 9 7.0	8 47.2	+8.2631	− 8.628	−2.78	+2.96
2 20 55.3	246	7 45 40.09	45 48.54	21 8 6.1	7 46.4	8.2590	8.625	2.79	2.98
3 20 51.8	247	7 46 6.10	46 14.48	21 7 5.5	6 45.9	8.2546	8.622	2.79	3.00
4 20 48.3	248	7 46 31.85	46 40.15	21 6 5.4	5 45.9	8.2502	8.619	2.80	3.02
5 20 44.8	249	7 46 57.34	47 5.56	21 5 5.7	4 46.3	8.2458	8.616	2.81	3.04
6 20 41.3	250	7 47 22.57	47 30.71	21 4 6.3	3 47.1	8.2413	8.614	2.81	3.06
7 20 37.8	251	7 47 47.54	47 55.60	21 3 7.4	2 48.3	8.2366	8.610	2.82	3.08
8 20 34.3	252	7 48 12.23	48 20.21	21 2 8.9	1 50.0	8.2317	8.607	2.83	3.10
9 20 30.8	253	7 48 36.64	48 44.53	21 1 10.9	0 52.2	8.2266	8.603	2.83	3.12
10 20 27.2	254	7 49 0.76	49 8.56	20 60 13.5	59 54.9	8.2215	8.599	2.84	3.13
11 20 23.7	255	7 49 24.60	49 32.31	20 59 16.6	58 58.2	8.2163	8.594	2.84	3.15
12 20 20.1	256	7 49 48.15	49 55.77	20 58 20.3	58 2.0	8.2109	8.590	2.85	3.16
13 20 16.6	257	7 50 11.40	50 18.93	20 57 24.6	57 6.5	8.2053	8.585	2.86	3.18
14 20 13.0	258	7 50 34.35	50 41.78	20 56 29.5	56 11.6	8.1994	8.580	2.86	3.19
15 20 9.5	259	7 50 56.98	51 4.32	20 55 35.0	55 17.3	8.1933	8.576	2.87	3.21
16 20 5.9	260	7 51 19.30	51 26.54	20 54 41.0	54 23.5	8.1873	8.571	2.87	3.22
17 20 2.3	261	7 51 41.31	51 48.45	20 53 47.7	53 30.4	8.1811	8.565	2.88	3.23
18 19 58.7	262	7 52 3.00	52 10.04	20 52 55.1	52 38.0	8.1745	8.560	2.89	3.24
19 19 55.1	263	7 52 24.35	52 31.29	20 52 3.2	51 46.3	8.1677	8.553	2.89	3.25
20 19 51.5	264	7 52 45.37	52 52.20	20 51 12.1	50 55.4	8.1609	8.547	2.90	3.26
21 19 47.9	265	7 53 6.06	53 12.78	20 50 21.7	50 5.3	8.1538	8.541	2.91	3.27
22 19 44.3	266	7 53 26.41	53 33.02	20 49 32.1	49 16.0	8.1466	8.534	2.91	3.28
23 19 40.7	267	7 53 46.42	53 52.92	20 48 43.3	48 27.4	8.1391	8.526	2.92	3.29
24 19 37.1	268	7 54 6.08	54 12.47	20 47 55.3	47 39.6	8.1313	8.519	2.92	3.30
25 19 33.5	269	7 54 25.39	54 31.67	20 47 8.1	46 52.6	8.1235	8.512	2.93	3.31
26 19 29.9	270	7 54 44.35	54 50.52	20 46 21.7	46 6.5	8.1153	8.505	2.94	3.32
27 19 26.2	271	7 55 2.95	55 9.01	20 45 36.0	45 21.1	8.1068	8.497	2.94	3.33
28 19 22.6	272	7 55 21.18	55 27.12	20 44 51.2	44 36.6	8.0980	8.488	2.95	3.34
29 19 19.0	273	7 55 39.04	55 44.86	20 44 7.4	43 53.1	8.0890	8.478	2.95	3.35
30 19 15.3	274	7 55 56.53	56 2.23	20 43 24.6	43 10.6	8.0799	8.468	2.96	3.36
Oct. 1 19 11.7	275	7 56 13.66	56 19.24	20 42 42.7	42 29.0	8.0707	8.459	2.96	3.37
2 19 8.0	276	7 56 30.42	56 35.88	20 42 1.8	41 48.4	8.0610	8.448	2.96	3.38
3 19 4.4	277	7 56 46.80	56 52.14	20 41 21.8	41 8.7	8.0509	8.438	2.97	3.39
4 19 0.7	278	7 57 2.80	57 8.01	20 40 42.8	40 30.0	8.0403	8.427	2.97	3.39
5 18 57.1	279	7 57 18.40	57 23.49	20 40 4.8	39 52.3	8.0292	8.416	2.97	3.40
6 18 53.4	280	7 57 33.60	57 38.56	20 39 27.8	39 15.7	8.0177	8.403	2.98	3.40
7 18 49.7	281	7 57 48.40	57 53.23	20 38 51.9	38 40.1	8.0061	8.391	2.98	3.41
8 18 46.0	282	7 58 2.81	58 7.51	20 38 17.0	38 5.5	7.9942	8.378	2.99	3.41
9 18 42.3	283	7 58 16.82	58 21.39	20 37 43.1	37 32.0	7.9818	8.365	2.99	3.41
10 18 38.6	284	7 58 30.43	58 34.86	20 37 10.3	36 59.6	7.9687	8.350	2.99	3.42
11 18 34.9	285	7 58 43.62	58 47.92	20 36 38.6	36 28.3	7.9549	8.334	3.00	3.42
12 18 31.1	286	7 58 56.39	59 0.55	20 36 8.1	35 58.1	7.9406	8.318	3.00	3.42
13 18 27.4	287	7 59 8.74	59 12.76	20 35 38.7	35 29.1	7.9259	8.302	3.01	3.43
14 18 23.7	288	7 59 20.67	59 24.55	20 35 10.4	35 1.2	7.9104	8.284	3.01	3.44
15 18 19.9	289	7 59 32.17	59 35.91	20 34 43.3	34 34.5	7.8943	8.265	3.01	3.45
16 18 16.2	290	7 59 43.25	59 46.85	20 34 17.4	34 9.0	7.8775	8.245	3.02	3.46
17 18 12.4	291	7 59 53.89	59 57.35	20 33 52.7	33 44.7	7.8597	8.224	3.02	3.46
18 18 8.6	292	8 0 4.10	0 7.42	20 33 29.3	33 21.7	7.8412	8.199	3.02	3.47
19 18 4.9	293	8 0 13.87	0 17.04	20 33 7.1	32 59.9	7.8216	8.175	3.03	3.48
20 18 1.1	294	8 0 23.20	0 26.22	20 32 46.2	32 39.4	7.8012	8.148	3.03	3.48
21 17 57.3	295	8 0 32.09	0 34.96	20 32 26.6	32 20.3	7.7794	8.120	3.03	3.49
22 17 53.5	296	8 0 40.53	0 43.25	20 32 8.2	32 2.3	7.7563	8.092	3.03	3.49
23 17 49.7	297	8 0 48.52	0 51.09	20 31 51.0	31 45.5	7.7315	8.059	3.04	3.50
24 17 45.9	298	8 0 56.05	0 58.47	20 31 35.2	31 30.1	7.7053	8.022	3.04	3.50
25 17 42.1	299	8 1 3.13	1 5.40	20 31 20.7	31 16.0	7.6777	7.983	3.04	3.50
26 17 38.3	300	8 1 9.76	1 11.88	20 31 7.5	31 3.3	7.6478	7.938	3.04	3.51
27 17 34.4	301	8 1 15.93	1 17.90	20 30 55.7	30 51.9	7.6158	7.889	3.04	3.51
28 17 30.6	302	8 1 21.65	1 23.47	20 30 45.2	30 41.8	7.5816	7.837	3.04	3.52
29 17 26.8	303	8 1 26.92	1 28.58	20 30 35.9	30 33.0	7.5436	7.779	3.04	3.52
30 17 22.9	304	8 1 31.72	1 33.23	20 30 27.9	30 25.5	7.5016	7.705	3.04	3.52
31 17 19.1	305	8 1 36.06	1 37.41	20 30 21.3	30 19.3	7.4555	7.612	3.04	3.53
32 17 15.2	306	8 1 39.94	1 41.14	+20 30 16.1	30 14.5	+7.4033	− 7.500	−3.04	+3.53

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Nov. 1 17 15.2	306	8 1 39.94	1 41.14	+20 30 16.1	30 14.5	+7.4033	− 7.500	−3.04	+3.53
2 17 11.3	307	8 1 43.35	1 44.40	20 30 12.2	30 11.1	7.3441	7.347	3.04	3.53
3 17 7.4	308	8 1 46.30	1 47.19	20 30 9.7	30 9.0	7.2762	7.097	3.05	3.53
4 17 3.5	309	8 1 48.79	1 49.52	20 30 8.6	30 8.4	7.1948	− 6.495	3.05	3.53
5 16 59.6	310	8 1 50.81	1 51.39	20 30 8.8	30 9.1	7.0933	+ 6.796	3.05	3.53
6 16 55.7	311	8 1 52.36	1 52.79	20 30 10.4	30 11.1	6.9622	7.203	3.05	3.53
7 16 51.8	312	8 1 53.45	1 53.72	20 30 13.4	30 14.5	6.7711	7.410	3.05	3.53
8 16 47.9	313	8 1 54.06	1 54.17	20 30 17.8	30 19.4	+6.4098	7.549	3.05	3.53
9 16 43.9	314	8 1 54.19	1 54.14	20 30 23.6	30 25.7	−5.8416	7.651	3.05	3.53
10 16 40.0	315	8 1 53.86	1 53.65	20 30 30.7	30 33.3	6.5937	7.734	3.05	3.53
11 16 36.0	316	8 1 53.06	1 52.69	20 30 39.2	30 42.3	6.8587	7.805	3.05	3.53
12 16 32.1	317	8 1 51.78	1 51.25	20 30 49.1	30 52.7	7.0221	7.867	3.05	3.53
13 16 28.1	318	8 1 50.03	1 49.34	20 31 0.4	31 4.5	7.1383	7.921	3.05	3.53
14 16 24.2	319	8 1 47.82	1 46.97	20 31 13.1	31 17.7	7.2299	7.969	3.05	3.53
15 16 20.2	320	8 1 45.14	1 44.14	20 31 27.2	31 32.2	7.3063	8.012	3.05	3.53
16 16 16.2	321	8 1 41.99	1 40.83	20 31 42.7	31 48.1	7.3712	8.050	3.05	3.53
17 16 12.2	322	8 1 38.37	1 37.06	20 31 59.5	32 5.4	7.4277	8.085	3.05	3.52
18 16 8.2	323	8 1 34.28	1 32.82	20 32 17.7	32 24.1	7.4771	8.118	3.04	3.52
19 16 4.2	324	8 1 29.73	1 28.11	20 32 37.3	32 44.1	7.5211	8.148	3.04	3.51
20 16 0.2	325	8 1 24.72	1 22.95	20 32 58.2	33 5.4	7.5606	8.175	3.04	3.50
21 15 56.1	326	8 1 19.26	1 17.34	20 33 20.4	33 28.0	7.5964	8.200	3.04	3.49
22 15 52.1	327	8 1 13.35	1 11.28	20 33 43.9	33 52.0	7.6298	8.224	3.03	3.49
23 15 48.1	328	8 1 6.98	1 4.76	20 34 8.7	34 17.3	7.6609	8.247	3.03	3.48
24 15 44.0	329	8 1 0.16	0 57.79	20 34 34.8	34 43.8	7.6895	8.269	3.03	3.48
25 15 40.0	330	8 0 52.89	0 50.37	20 35 2.2	35 11.6	7.7158	8.289	3.02	3.47
26 15 35.9	331	8 0 45.19	0 42.52	20 35 30.8	35 40.6	7.7404	8.307	3.02	3.46
27 15 31.9	332	8 0 37.05	0 34.23	20 36 0.6	36 10.8	7.7636	8.325	3.02	3.46
28 15 27.8	333	8 0 28.48	0 25.52	20 36 31.7	36 42.3	7.7854	8.343	3.01	3.45
29 15 23.7	334	8 0 19.48	0 16.38	20 37 4.0	37 15.0	7.8061	8.359	3.01	3.44
30 15 19.6	335	8 0 10.05	0 6.81	20 37 37.6	37 49.0	7.8259	8.375	3.00	3.43
Dec. 1 15 15.5	336	7 60 0.19	59 56.81	20 38 12.4	38 24.2	7.8445	8.390	3.00	3.42
2 15 11.4	337	7 59 49.92	59 46.40	20 38 48.3	39 0.5	7.8618	8.403	2.99	3.42
3 15 7.3	338	7 59 39.24	59 35.59	20 39 25.3	39 37.9	7.8785	8.417	2.99	3.41
4 15 3.2	339	7 59 28.15	59 24.37	20 40 3.5	40 16.4	7.8945	8.429	2.98	3.40
5 14 59.1	340	7 59 16.65	59 12.74	20 40 42.7	40 56.0	7.9096	8.441	2.98	3.39
6 14 54.9	341	7 59 4.76	59 0.72	20 41 23.0	41 36.7	7.9239	8.453	2.97	3.38
7 14 50.8	342	7 58 52.48	58 48.31	20 42 4.4	42 18.4	7.9377	8.464	2.97	3.37
8 14 46.6	343	7 58 39.81	58 35.51	20 42 46.8	43 1.2	7.9511	8.475	2.96	3.36
9 14 42.5	344	7 58 26.75	58 22.33	20 43 30.3	43 45.0	7.9637	8.485	2.96	3.35
10 14 38.3	345	7 58 13.32	58 8.78	20 44 14.8	44 29.8	7.9757	8.495	2.95	3.34
11 14 34.1	346	7 57 59.52	57 54.86	20 45 0.3	45 15.6	7.9872	8.504	2.94	3.33
12 14 30.0	347	7 57 45.36	57 40.58	20 45 46.8	46 2.4	7.9980	8.513	2.93	3.32
13 14 25.8	348	7 57 30.85	57 25.96	20 46 34.1	46 50.0	8.0085	8.521	2.92	3.31
14 14 21.6	349	7 57 15.99	57 10.99	20 47 22.3	47 38.5	8.0186	8.529	2.91	3.30
15 14 17.4	350	7 57 0.79	56 55.68	20 48 11.4	48 27.8	8.0280	8.536	2.90	3.29
16 14 13.2	351	7 56 45.27	56 40.06	20 49 1.3	49 18.0	8.0370	8.543	2.89	3.28
17 14 9.0	352	7 56 29.43	56 24.12	20 49 52.0	50 8.9	8.0458	8.550	2.88	3.27
18 14 4.8	353	7 56 13.27	56 7.86	20 50 43.4	51 0.5	8.0541	8.556	2.86	3.26
19 14 0.6	354	7 55 56.81	55 51.30	20 51 35.6	51 52.9	8.0620	8.562	2.85	3.25
20 13 56.4	355	7 55 40.05	55 34.45	20 52 28.6	52 46.1	8.0695	8.567	2.83	3.24
21 13 52.2	356	7 55 23.01	55 17.32	20 53 22.2	53 39.9	8.0765	8.573	2.82	3.22
22 13 48.0	357	7 55 5.70	54 59.92	20 54 16.4	54 34.3	8.0833	8.578	2.80	3.20
23 13 43.8	358	7 54 48.12	54 42.26	20 55 11.2	55 29.3	8.0899	8.583	2.78	3.17
24 13 39.6	359	7 54 30.28	54 24.34	20 56 6.6	56 24.9	8.0961	8.587	2.76	3.14
25 13 35.4	360	7 54 12.19	54 6.18	20 57 2.6	57 21.1	8.1020	8.592	2.74	3.11
26 13 31.1	361	7 53 53.86	53 47.78	20 57 59.1	58 17.8	8.1074	8.596	2.72	3.08
27 13 26.9	362	7 53 35.31	53 29.16	20 58 56.1	59 14.9	8.1124	8.598	2.69	3.04
28 13 22.7	363	7 53 16.55	53 10.34	20 59 53.6	60 12.5	8.1172	8.602	2.67	3.00
29 13 18.4	364	7 52 57.59	52 51.32	21 0 51.4	1 10.4	8.1216	8.605	2.64	2.95
30 13 14.2	365	7 52 38.45	52 32.13	21 1 49.5	2 8.6	8.1255	8.607	2.61	2.90
31 13 9.9	366	7 52 19.14	52 12.77	21 2 47.9	3 7.1	8.1292	8.609	2.58	2.85
32 13 5.6	367	7 51 59.66	51 53.25	+21 3 46.6	4 5.9	−8.1327	+ 8.611	−2.54	+2.78

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Jan. 0 8 33.3	0	3 15 54.77	15 54.01	+17 51 5.2	51 2.4	−7.5906	− 8.154	+2.61	+3.23
1 8 29.2	1	3 15 49.25	15 48.51	17 50 45.0	50 42.3	7.5765	8.138	2.62	3.23
2 8 25.2	2	3 15 43.91	15 43.20	17 50 25.6	50 23.0	7.5613	8.121	2.62	3.23
3 8 21.2	3	3 15 38.76	15 38.08	17 50 7.0	50 4.5	7.5453	8.104	2.63	3.23
4 8 17.2	4	3 15 33.80	15 33.14	17 49 49.1	49 46.7	7.5287	8.086	2.64	3.23
5 8 13.2	5	3 15 29.03	15 28.40	17 49 31.9	49 29.6	7.5114	8.067	2.64	3.23
6 8 9.2	6	3 15 24.45	15 23.84	17 49 15.4	49 13.2	7.4934	8.048	2.64	3.23
7 8 5.2	7	3 15 20.06	15 19.48	17 48 59.7	48 57.6	7.4751	8.027	2.65	3.23
8 8 1.2	8	3 15 15.85	15 15.29	17 48 44.7	48 42.7	7.4560	8.006	2.65	3.23
9 7 57.2	9	3 15 11.83	15 11.30	17 48 30.5	48 28.6	7.4344	7.983	2.66	3.23
10 7 53.2	10	3 15 8.02	15 7.52	17 48 17.0	48 15.2	7.4118	7.959	2.66	3.23
11 7 49.2	11	3 15 4.40	15 3.92	17 48 4.2	48 2.5	7.3882	7.933	2.66	3.23
12 7 45.2	12	3 15 0.98	15 0.53	17 47 52.2	47 50.6	7.3634	7.905	2.67	3.24
13 7 41.2	13	3 14 57.75	14 57.33	17 47 41.0	47 39.5	7.3372	7.875	2.67	3.24
14 7 37.2	14	3 14 54.72	14 54.32	17 47 30.6	47 29.2	7.3085	7.842	2.68	3.25
15 7 33.2	15	3 14 51.89	14 51.52	17 47 21.0	47 19.7	7.2770	7.805	2.68	3.25
16 7 29.2	16	3 14 49.27	14 48.93	17 47 12.2	47 11.0	7.2422	7.766	2.68	3.26
17 7 25.2	17	3 14 46.86	14 46.54	17 47 4.2	47 3.1	7.2043	7.722	2.69	3.26
18 7 21.2	18	3 14 44.66	14 44.37	17 46 57.0	46 56.0	7.1628	7.674	2.69	3.27
19 7 17.3	19	3 14 42.67	14 42.41	17 46 50.6	46 49.8	7.1181	7.620	2.70	3.28
20 7 13.3	20	3 14 40.88	14 40.65	17 46 45.0	46 44.3	7.0682	7.553	2.70	3.28
21 7 9.4	21	3 14 39.30	14 39.10	17 46 40.3	46 39.7	7.0104	7.470	2.70	3.28
22 7 5.4	22	3 14 37.93	14 37.76	17 46 36.5	46 36.0	6.9437	7.379	2.71	3.28
23 7 1.5	23	3 14 36.77	14 36.63	17 46 33.4	46 33.0	6.8649	7.281	2.71	3.28
24 6 57.6	24	3 14 35.82	14 35.71	17 46 31.0	46 30.7	6.7685	7.132	2.72	3.28
25 6 53.6	25	3 14 35.08	14 35.00	17 46 29.5	46 29.3	6.6410	6.863	2.72	3.28
26 6 49.7	26	3 14 34.56	14 34.51	17 46 28.9	46 28.8	6.4397	− 6.018	2.72	3.28
27 6 45.8	27	3 14 34.25	14 34.22	17 46 29.2	46 29.3	−6.1427	+ 6.587	2.72	3.27
28 6 41.8	28	3 14 34.16	14 34.16	17 46 30.3	46 30.5	+5.1427	7.018	2.72	3.27
29 6 37.9	29	3 14 34.29	14 34.32	17 46 32.2	46 32.5	6.2127	7.203	2.72	3.26
30 6 34.0	30	3 14 34.63	14 34.69	17 46 34.9	46 35.4	6.4900	7.333	2.72	3.26
31 6 30.1	31	3 14 35.18	14 35.27	17 46 38.4	46 29.0	6.6579	7.438	2.72	3.25
Feb. 1 6 26.1	32	3 14 35.94	14 36.06	17 46 42.8	46 43.5	6.7811	7.523	2.72	3.25
2 6 22.2	33	3 14 36.92	14 37.07	17 46 48.0	46 48.8	6.8791	7.594	2.71	3.25
3 6 18.3	34	3 14 38.12	14 38.30	17 46 54.1	46 55.0	6.9572	7.654	2.71	3.24
4 6 14.4	35	3 14 39.53	14 39.74	17 47 1.0	47 2.0	7.0220	7.705	2.71	3.24
5 6 10.5	36	3 14 41.15	14 41.39	17 47 8.7	47 9.8	7.0784	7.750	2.71	3.24
6 6 6.6	37	3 14 42.98	14 43.24	17 47 17.2	47 18.4	7.1294	7.791	2.71	3.24
7 6 2.7	38	3 14 45.03	14 45.32	17 47 26.5	47 27.8	7.1751	7.831	2.70	3.24
8 5 58.8	39	3 14 47.29	14 47.61	17 47 36.7	47 38.1	7.2155	7.867	2.70	3.23
9 5 54.9	40	3 14 49.76	14 50.11	17 47 47.7	47 49.2	7.2524	7.897	2.70	3.23
10 5 51.0	41	3 14 52.44	14 52.82	17 47 59.4	48 1.1	7.2865	7.924	2.70	3.23
11 5 47.1	42	3 14 55.33	14 55.73	17 48 11.9	48 13.7	7.3180	7.956	2.70	3.23
12 5 43.2	43	3 14 58.43	14 58.86	17 48 25.4	48 27.3	7.3468	7.983	2.70	3.23
13 5 39.4	44	3 15 1.73	15 2.19	17 48 39.6	48 41.6	7.3737	8.007	2.70	3.23
14 5 35.5	45	3 15 5.24	15 5.73	17 48 54.7	48 56.8	7.3997	8.029	2.70	3.23
15 5 31.6	46	3 15 8.96	15 9.48	17 49 10.5	49 12.7	7.4243	8.050	2.70	3.23
16 5 27.8	47	3 15 12.89	15 13.43	17 49 27.1	49 29.4	7.4464	8.071	2.70	3.23
17 5 23.9	48	3 15 17.01	15 17.58	17 49 44.5	49 46.9	7.4675	8.091	2.70	3.23
18 5 20.1	49	3 15 21.34	15 21.94	17 50 2.6	50 5.1	7.4885	8.110	2.70	3.23
19 5 16.2	50	3 15 25.88	15 26.50	17 50 21.6	50 24.2	7.5084	8.128	2.70	3.23
20 5 12.3	51	3 15 30.62	15 31.27	17 50 41.4	50 44.1	7.5272	8.145	2.70	3.23
21 5 8.5	52	3 15 35.57	15 36.25	17 51 1.9	51 4.7	7.5450	8.161	2.70	3.23
22 5 4.6	53	3 15 40.71	15 41.42	17 51 23.1	51 26.0	7.5619	8.176	2.69	3.23
23 5 0.8	54	3 15 46.05	15 46.79	17 51 45.0	51 48.0	7.5773	8.190	2.69	3.23
24 4 57.0	55	3 15 51.59	15 52.35	17 52 7.7	52 10.8	7.5928	8.204	2.69	3.23
25 4 53.1	56	3 15 57.33	15 58.12	17 52 31.2	52 34.4	7.6075	8.218	2.69	3.23
26 4 49.3	57	3 16 3.27	16 4.08	17 52 55.4	52 58.7	7.6217	8.231	2.68	3.22
27 4 45.5	58	3 16 9.40	16 10.24	17 53 20.3	53 23.7	7.6353	8.244	2.68	3.22
28 4 41.7	59	3 16 15.71	16 16.58	17 53 45.9	53 49.4	7.6485	8.257	2.68	3.22
29 4 37.8	60	3 16 22.22	16 23.12	17 54 12.3	54 15.9	7.6611	8.269	2.68	3.21
30 4 34.0	61	3 16 28.93	16 29.85	+17 54 39.4	54 43.1	+7.6732	+ 8.280	+2.68	+3.20

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.		Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
			At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d.	h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Mar. 1	4 37.8	60	3 16 22.22	16 23.12	+17 54 12.3	54 15.9	+7.6611	+ 8.269	+2.68	+3.21
2	4 34.0	61	3 16 28.93	16 29.85	17 54 39.4	54 43.1	7.6732	8.280	2.67	3.20
3	4 30.2	62	3 16 35.82	16 36.77	17 55 7.2	55 11.0	7.6849	8.291	2.67	3.19
4	4 26.4	63	3 16 42.89	16 43.87	17 55 35.8	55 39.7	7.6962	8.302	2.66	3.19
5	4 22.6	64	3 16 50.13	16 51.13	17 56 5.1	56 9.1	7.7071	8.313	2.66	3.18
6	4 18.8	65	3 16 57.56	16 58.59	17 56 35.0	56 39.1	7.7177	8.323	2.65	3.18
7	4 15.0	66	3 17 5.17	17 6.22	17 57 5.5	57 9.7	7.7279	8.332	2.65	3.17
8	4 11.2	67	3 17 12.96	17 14.04	17 57 36.5	57 40.7	7.7377	8.340	2.64	3.17
9	4 7.4	68	3 17 20.91	17 22.02	17 58 8.2	58 12.6	7.7471	8.348	2.63	3.16
10	4 3.6	69	3 17 29.04	17 30.17	17 58 40.6	58 45.1	7.7562	8.356	2.62	3.16
11	3 59.8	70	3 17 37.34	17 38.50	17 59 13.6	59 18.2	7.7651	8.364	2.62	3.15
12	3 56.0	71	3 17 45.80	17 46.98	17 59 47.2	59 51.9	7.7738	8.372	2.61	3.14
13	3 52.2	72	3 17 54.44	17 55.65	18 0 21.5	0 26.3	7.7823	8.380	2.60	3.13
14	3 48.4	73	3 18 3.25	18 4.48	18 0 56.3	1 1.1	7.7906	8.387	2.59	3.13
15	3 44.6	74	3 18 12.23	18 13.48	18 1 31.6	1 36.5	7.7985	8.394	2.58	3.12
16	3 40.8	75	3 18 21.37	18 22.64	18 2 7.5	2 12.5	7.8061	8.401	2.58	3.12
17	3 37.0	76	3 18 30.66	18 31.96	18 2 44.0	2 49.1	7.8135	8.408	2.57	3.11
18	3 33.2	77	3 18 40.10	18 41.42	18 3 21.1	3 26.3	7.8206	8.414	2.57	3.10
19	3 29.4	78	3 18 49.70	18 51.04	18 3 58.7	4 3.9	7.8275	8.420	2.56	3.09
20	3 25.7	79	3 18 59.45	19 0.81	18 4 36.9	4 42.2	7.8342	8.426	2.56	3.08
21	3 21.9	80	3 19 9.36	19 10.74	18 5 15.6	5 21.0	7.8407	8.432	2.55	3.07
22	3 18.2	81	3 19 19.41	19 20.81	18 5 54.8	6 0.3	7.8470	8.438	2.54	3.06
23	3 14.4	82	3 19 29.62	19 31.04	18 6 34.6	6 40.2	7.8532	8.444	2.54	3.04
24	3 10.6	83	3 19 39.97	19 41.41	18 7 14.9	7 20.5	7.8592	8.450	2.53	3.02
25	3 6.9	84	3 19 50.46	19 51.92	18 7 55.7	8 1.4	7.8651	8.455	2.53	3.00
26	3 3.1	85	3 20 1.08	20 2.56	18 8 37.0	8 42.7	7.8708	8.460	2.52	2.98
27	2 59.4	86	3 20 11.85	20 13.35	18 9 18.7	9 24.5	7.8763	8.465	2.51	2.96
28	2 55.7	87	3 20 22.76	20 24.28	18 10 0.8	10 6.7	7.8817	8.469	2.50	2.94
29	2 52.0	88	3 20 33.79	20 35.34	18 10 43.4	10 49.3	7.8869	8.473	2.49	2.93
30	2 48.2	89	3 20 44.96	20 46.53	18 11 26.4	11 32.4	7.8920	8.477	2.48	2.92
31	2 44.5	90	3 20 56.25	20 57.84	18 12 9.8	12 15.8	7.8969	8.481	2.47	2.90
Apr. 1	2 40.7	91	3 21 7.67	21 9.28	18 12 53.5	12 59.6	7.9016	8.485	2.46	2.89
2	2 37.0	92	3 21 19.20	21 20.83	18 13 37.6	13 43.8	7.9061	8.489	2.45	2.88
3	2 33.2	93	3 21 30.85	21 32.50	18 14 22.2	14 28.4	7.9104	8.493	2.44	2.87
4	2 29.5	94	3 21 42.62	21 44.28	18 15 7.3	15 13.6	7.9146	8.497	2.43	2.86
5	2 25.8	95	3 21 54.51	21 56.19	18 15 52.7	15 59.0	7.9187	8.500	2.42	2.84
6	2 22.0	96	3 22 6.51	22 8.21	18 16 38.5	16 44.9	7.9227	8.503	2.41	2.82
7	2 18.3	97	3 22 18.62	22 20.33	18 17 24.5	17 31.0	7.9266	8.506	2.40	2.80
8	2 14.5	98	3 22 30.84	22 32.57	18 18 10.8	18 17.3	7.9304	8.509	2.39	2.79
9	2 10.8	99	3 22 43.16	22 44.90	18 18 57.5	19 4.1	7.9340	8.512	2.38	2.78
10	2 7.1	100	3 22 55.58	22 57.34	18 19 44.4	19 51.0	7.9374	8.515	2.37	2.76
11	2 3.4	101	3 23 8.10	23 9.88	18 20 31.6	20 38.3	7.9406	8.518	2.36	2.74
12	1 59.6	102	3 23 20.71	23 22.50	18 21 19.1	21 25.8	7.9437	8.521	2.35	2.72
13	1 55.9	103	3 23 33.41	23 35.22	18 22 6.9	22 13.7	7.9467	8.523	2.34	2.70
14	1 52.2	104	3 23 46.19	23 48.01	18 22 55.0	23 1.8	7.9497	8.525	2.33	2.68
15	1 48.5	105	3 23 59.06	24 0.90	18 23 43.4	23 50.2	7.9528	8.527	2.32	2.66
16	1 44.8	106	3 24 12.02	24 13.87	18 24 32.0	24 38.9	7.9558	8.529	2.31	2.64
17	1 41.0	107	3 24 25.08	24 26.95	18 25 20.9	25 27.8	7.9587	8.531	2.30	2.62
18	1 37.3	108	3 24 38.22	24 40.10	18 26 10.0	26 17.0	7.9615	8.533	2.29	2.60
19	1 33.6	109	3 24 51.44	24 53.33	18 26 59.2	27 6.2	7.9641	8.535	2.28	+2.58
20	1 29.9	110	3 25 4.74	25 6.64	18 27 48.7	27 55.7	7.9665	8.537	2.26	
21	1 26.2	111	3 25 18.12	25 20.03	18 28 38.3	28 45.4	7.9688	8.539	2.24	
22	1 22.5	112	3 25 31.56	25 33.49	18 29 28.1	29 35.2	7.9709	8.541	2.22	
23	1 18.8	113	3 25 45.06	25 47.00	18 30 18.2	30 25.4	7.9730	8.542	2.20	
24	1 15.1	114	3 25 58.63	26 0.58	18 31 8.4	31 15.6	7.9750	8.543	2.18	
25	1 11.4	115	3 26 12.25	26 14.21	18 31 58.8	32 6.0	7.9769	8.544	2.16	
26	1 7.7	116	3 26 25.93	26 27.90	18 32 49.3	32 56.5	7.9788	8.545	2.14	
27	1 4.0	117	3 26 39.67	26 41.65	18 33 39.9	33 47.2	7.9806	8.546	2.12	
28	1 0.3	118	3 26 53.47	26 55.46	18 34 30.6	34 37.9	7.9823	8.547	2.10	
29	0 56.6	119	3 27 7.32	27 9.32	18 35 21.3	35 28.6	7.9839	8.547	2.08	
30	0 52.9	120	3 27 21.22	27 23.23	18 36 12.1	36 19.4	7.9853	8.548	2.05	
31	0 49.2	121	3 27 35.17	27 37.19	+18 37 3.0	37 10.3	+7.9866	+ 8.549	+2.03	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
May 1 0 49.2	121	3 27 35.17	27 37.19	+18 37 3.0	37 10.3	+7.9866	+ 8.549		
2 0 45.5	122	3 27 49.16	27 51.19	18 37 54.0	38 1.4	7.9878	8.550		
3 0 41.8	123	3 28 3.17	28 5.21	18 38 45.1	38 52.5	7.9889	8.550		
4 0 38.1	124	3 28 17.22	28 19.26	18 39 36.2	39 43.6	7.9898	8.550		
5 0 34.4	125	3 28 31.30	28 33.35	18 40 27.4	40 34.7	7.9907	8.550		
6 0 30.7	126	3 28 45.42	28 47.47	18 41 18.5	41 25.9	7.9916	8.550		
7 0 27.0	127	3 28 59.57	29 1.63	18 42 9.7	42 17.1	7.9925	8.550		
8 0 23.3	128	3 29 13.75	29 15.81	18 43 0.9	43 8.3	7.9933	8.550		
9 0 19.6	129	3 29 27.95	29 30.02	18 43 52.0	43 59.4	7.9941	8.550		
10 0 15.9	130	3 29 42.16	29 44.23	18 44 43.1	44 50.5	7.9948	8.550		
11 0 12.2	131	3 29 56.39	29 58.47	18 45 34.2	45 41.6	7.9953	8.550		
12 0 8.5	132	3 30 10.63	30 12.71	18 46 25.3	46 32.7	7.9958	8.549		
13 0 4.8	133	3 30 24.89	30 26.98	18 47 16.3	47 23.7	7.9962	8.549		
14 0 1.1	134	3 30 39.18	30 41.27	18 48 7.3	48 14.7	7.9965	8.549		
14 23 57.4	135	3 30 53.47	30 55.56	18 48 58.2	49 5.6	7.9967	8.548		
15 23 53.7	136	3 31 7.77	31 9.86	18 49 49.1	49 56.5	7.9968	8.548		
16 23 50.0	137	3 31 22.07	31 24.17	18 50 40.0	50 47.4	7.9968	8.547		
17 23 46.4	138	3 31 36.38	31 38.48	18 51 30.7	51 38.1	7.9967	8.546		
18 23 42.7	139	3 31 50.68	31 52.78	18 52 21.4	52 28.8	7.9966	8.546		
19 23 39.0	140	3 32 4.96	32 7.06	18 53 12.0	53 19.4	7.9965	8.545		
20 23 35.3	141	3 32 19.23	32 21.33	18 54 2.5	54 9.9	7.9962	8.544		
21 23 31.6	142	3 32 33.49	32 35.60	18 54 52.7	55 0.0	7.9958	8.543		
22 23 27.9	143	3 32 47.74	32 49.85	18 55 42.8	55 50.1	7.9953	8.542		
23 23 24.2	144	3 33 1.97	33 4.08	18 56 32.8	56 40.1	7.9947	8.540		−2.68
24 23 20.5	145	3 33 16.19	33 18.29	18 57 22.6	57 29.9	7.9940	8.539		2.69
25 23 16.8	146	3 33 30.38	33 32.48	18 58 12.2	58 19.5	7.9931	8.538		2.70
26 23 13.1	147	3 33 44.55	33 46.65	18 59 1.6	59 8.8	7.9922	8.536		2.71
27 23 9.4	148	3 33 58.68	34 0.77	18 59 50.9	59 58.1	7.9912	8.534		2.71
28 23 5.7	149	3 34 12.78	34 14.87	19 0 40.0	0 47.2	7.9902	8.532	−2.08	2.72
29 23 2.0	150	3 34 26.84	34 28.93	19 1 28.9	1 36.1	7.9891	8.530	2.09	2.72
30 22 58.3	151	3 34 40.86	34 42.94	19 2 17.5	2 24.7	7.9880	8.528	2.10	2.73
31 22 54.6	152	3 34 54.84	34 56.92	19 3 5.9	3 13.0	7.9868	8.526	2.11	2.73
June 1 22 50.9	153	3 35 8.78	35 10.85	19 3 54.1	4 1.2	7.9855	8.524	2.13	2.74
2 22 47.2	154	3 35 22.68	35 24.75	19 4 42.0	4 49.1	7.9840	8.521	2.15	2.75
3 22 43.5	155	3 35 36.54	35 38.60	19 5 29.7	5 36.8	7.9824	8.519	2.16	2.75
4 22 39.8	156	3 35 50.34	35 52.40	19 6 17.1	6 24.1	7.9807	8.517	2.17	2.76
5 22 36.1	157	3 36 4.10	36 6.15	19 7 4.2	7 11.2	7.9789	8.515	2.18	2.77
6 22 32.4	158	3 36 17.78	36 19.83	19 7 51.1	7 58.1	7.9770	8.512	2.20	2.78
7 22 28.7	159	3 36 31.41	36 33.45	19 8 37.7	8 44.6	7.9750	8.509	2.22	2.79
8 22 25.0	160	3 36 44.97	36 47.01	19 9 24.1	9 31.0	7.9730	8.507	2.23	2.81
9 22 21.3	161	3 36 58.48	37 0.51	19 10 10.2	10 17.0	7.9710	8.504	2.24	2.83
10 22 17.6	162	3 37 11.92	37 13.94	19 10 56.0	11 2.8	7.9690	8.501	2.25	2.86
11 22 13.9	163	3 37 25.31	37 27.33	19 11 41.5	11 48.2	7.9669	8.498	2.26	2.88
12 22 10.2	164	3 37 38.63	37 40.64	19 12 26.6	12 33.3	7.9646	8.495	2.28	2.90
13 22 6.5	165	3 37 51.86	37 53.86	19 13 11.6	13 18.3	7.9622	8.492	2.29	2.91
14 22 2.8	166	3 38 5.03	38 7.02	19 13 56.2	14 2.8	7.9597	8.489	2.30	2.92
15 21 59.0	167	3 38 18.11	38 20.09	19 14 40.4	14 47.0	7.9571	8.486	2.31	2.93
16 21 55.3	168	3 38 31.11	38 33.08	19 15 24.2	15 30.7	7.9544	8.482	2.32	2.94
17 21 51.6	169	3 38 44.03	38 45.99	19 16 7.6	16 14.1	7.9514	8.478	2.33	2.95
18 21 47.9	170	3 38 56.86	38 58.81	19 16 50.7	16 57.2	7.9484	8.475	2.34	2.96
19 21 44.2	171	3 39 9.61	39 11.57	19 17 33.5	17 39.9	7.9453	8.471	2.35	2.97
20 21 40.4	172	3 39 22.26	39 24.19	19 18 15.9	18 22.3	7.9421	8.467	2.36	2.97
21 21 36.7	173	3 39 34.81	39 36.71	19 18 57.8	19 4.2	7.9388	8.463	2.36	2.98
22 21 33.0	174	3 39 47.27	39 49.15	19 19 39.4	19 45.7	7.9355	8.459	2.37	2.98
23 21 29.3	175	3 39 59.63	40 1.49	19 20 20.7	20 26.9	7.9320	8.455	2.38	2.99
24 21 25.5	176	3 40 11.90	40 13.74	19 21 1.5	21 7.7	7.9283	8.451	2.39	3.00
25 21 21.8	177	3 40 24.05	40 25.88	19 21 41.8	21 47.9	7.9245	8.447	2.40	3.01
26 21 18.0	178	3 40 36.09	40 37.91	15 22 21.7	22 27.8	7.9205	8.442	2.41	3.02
27 21 14.3	179	3 40 48.02	40 49.84	19 23 1.3	23 7.3	7.9164	8.437	2.42	3.03
28 21 10.6	180	3 40 59.85	41 1.66	19 23 40.5	23 46.5	7.9122	8.432	2.43	3.04
29 21 6.8	181	3 41 11.56	41 13.34	19 24 19.2	24 25.1	7.9080	8.427	2.45	3.05
30 21 3.1	182	3 41 23.16	41 24.93	+19 24 57.3	25 3.1	+7.9036	+ 8.422	−2.46	−3.07

URANUS, 1857.

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
July 1 20 59.3	183	3 41 34.63	41 36.38	+19 25 35.0	25 40.8	+7.8991	+ 8.416	−2.48	−3.08
2 20 55.6	184	3 41 45.98	41 47.72	19 26 12.3	26 18.0	7.8945	8.411	2.49	3.10
3 20 51.9	185	3 41 57.22	41 58.94	19 26 49.2	26 54.8	7.8897	8.406	2.49	3.11
4 20 48.1	186	3 42 8.33	42 10.04	19 27 25.6	27 31.1	7.8847	8.401	2.50	3.12
5 20 44.4	187	3 42 19.31	42 21.00	19 28 1.5	28 7.0	7.8795	8.395	2.51	3.13
6 20 40.6	188	3 42 30.15	42 31.82	19 28 36.9	28 42.3	7.8742	8.389	2.52	3.14
7 20 36.9	189	3 42 40.86	42 42.51	19 29 11.9	29 17.2	7.8687	8.383	2.52	3.15
8 20 33.1	190	3 42 51.44	42 53.07	19 29 46.4	29 51.7	7.8631	8.377	2.53	3.15
9 20 29.4	191	3 43 1.88	43 3.49	19 30 20.3	30 25.5	7.8574	8.370	2.53	3.16
10 20 25.6	192	3 43 12.19	43 13.78	19 30 53.7	30 58.8	7.8516	8.363	2.54	3.17
11 20 21.9	193	3 43 22.36	43 23.93	19 31 26.6	31 31.6	7.8456	8.356	2.55	3.17
12 20 18.1	194	3 43 32.38	43 33.93	19 31 59.2	32 4.1	7.8395	8.349	2.55	3.18
13 20 14.3	195	3 43 42.26	43 43.79	19 32 31.2	32 36.0	7.8332	8.342	2.56	3.18
14 20 10.6	196	3 43 51.99	43 53.49	19 33 2.7	33 7.5	7.8267	8.335	2.56	3.19
15 20 6.8	197	3 44 1.58	44 3.06	19 33 33.7	33 38.4	7.8198	8.328	2.57	3.19
16 20 3.0	198	3 44 11.01	44 12.47	19 34 4.2	34 8.8	7.8127	8.320	2.58	3.20
17 19 59.2	199	3 44 20.29	44 21.72	19 34 34.2	34 38.8	7.8054	8.313	2.58	3.20
18 19 55.4	200	3 44 29.41	44 30.82	19 35 3.4	35 7.9	7.7979	8.305	2.59	3.20
19 19 51.6	201	3 44 38.38	44 39.76	19 35 32.0	35 36.4	7.7901	8.297	2.60	3.21
20 19 47.9	202	3 44 47.19	44 48.55	19 36 0.2	36 4.6	7.7820	8.289	2.60	3.21
21 19 44.1	203	3 44 55.83	44 57.17	19 36 27.9	36 32.2	7.7737	8.280	2.61	3.22
22 19 40.3	204	3 45 4.30	45 5.61	19 36 55.1	36 59.3	7.7651	8.271	2.61	3.22
23 19 36.5	205	3 45 12.60	45 13.89	19 37 21.6	37 25.7	7.7563	8.262	2.62	3.22
24 19 32.7	206	3 45 20.73	45 21.99	19 37 47.5	37 51.5	7.7473	8.253	2.62	3.22
25 19 28.9	207	3 45 28.69	45 29.93	19 38 12.7	38 16.6	7.7380	8.243	2.62	3.23
26 19 25.1	208	3 45 36.49	45 37.71	19 38 37.5	38 41.3	7.7284	8.233	2.63	3.23
27 19 21.3	209	3 45 44.11	45 45.29	19 39 1.8	39 5.5	7.7185	8.222	2.63	3.23
28 19 17.5	210	3 45 51.56	45 52.72	19 39 25.5	39 29.1	7.7083	8.211	2.63	3.23
29 19 13.7	211	3 45 58.83	45 59.96	19 39 48.6	39 52.1	7.6977	8.200	2.63	3.23
30 19 9.9	212	3 46 5.92	46 7.02	19 40 11.0	40 14.4	7.6867	8.188	2.64	3.23
31 19 6.0	213	3 46 12.83	46 13.90	19 40 32.7	40 36.0	7.6753	8.165	2.64	3.23
Aug. 1 19 2.2	214	3 46 19.56	46 20.60	19 40 53.9	40 57.1	7.6635	8.162	2.64	3.23
2 18 58.4	215	3 46 26.10	46 27.11	19 41 14.5	41 17.6	7.6513	8.149	2.64	3.23
3 18 54.6	216	3 46 32.46	46 33.45	19 41 34.5	41 37.6	7.6387	8.136	2.64	3.23
4 18 50.8	217	3 46 38.63	46 39.59	19 41 54.0	41 57.0	7.6256	8.122	2.65	3.23
5 18 47.0	218	3 46 44.62	46 45.55	19 42 12.9	42 15.8	7.6120	8.108	2.65	3.23
6 18 43.1	219	3 46 50.42	46 51.32	19 42 31.1	42 33.9	7.5978	8.094	2.66	3.23
7 18 39.3	220	3 46 56.03	46 56.90	19 42 48.6	42 51.3	7.5831	8.079	2.66	3.23
8 18 35.4	221	3 47 1.45	47 2.29	19 43 5.6	43 8.2	7.5680	8.063	2.67	3.22
9 18 31.6	222	3 47 6.68	47 7.49	19 43 22.0	43 24.5	7.5521	8.047	2.67	3.22
10 18 27.7	223	3 47 11.72	47 12.50	19 43 37.8	43 40.2	7.5354	8.030	2.68	3.22
11 18 23.8	224	3 47 16.56	47 17.31	19 43 52.9	43 55.2	7.5174	8.012	2.68	3.22
12 18 20.0	225	3 47 21.20	47 21.92	19 44 7.4	44 9.6	7.4992	7.994	2.68	3.22
13 18 16.1	226	3 47 25.65	47 26.34	19 44 21.3	44 23.4	7.4801	7.974	2.69	3.22
14 18 12.3	227	3 47 29.90	47 30.55	19 44 34.5	44 36.5	7.4597	7.953	2.69	3.22
15 18 8.4	228	3 47 33.95	47 34.57	19 44 47.1	44 49.0	7.4382	7.932	2.70	3.22
16 18 4.5	229	3 47 37.80	47 38.39	19 44 59.1	45 0.9	7.4151	7.910	2.70	3.22
17 18 0.6	230	3 47 41.44	47 42.00	19 45 10.5	45 12.2	7.3900	7.885	2.70	3.22
18 17 56.7	231	3 47 44.87	47 45.40	19 45 21.2	45 22.8	7.3641	7.857	2.71	3.22
19 17 52.9	232	3 47 48.10	47 48.60	19 45 31.2	45 32.7	7.3365	7.827	2.71	3.22
20 17 49.0	233	3 47 51.12	47 51.58	19 45 40.5	45 41.9	7.3078	7.796	2.72	3.22
21 17 45.1	234	3 47 53.95	47 54.38	19 45 49.2	45 50.5	7.2770	7.761	2.72	3.22
22 17 41.2	235	3 47 56.57	47 56.97	19 45 57.1	45 58.3	7.2413	7.726	2.72	3.22
23 17 37.3	236	3 47 58.97	47 59.34	19 46 4.5	46 5.6	7.2034	7.687	2.72	3.22
24 17 33.5	237	3 48 1.17	48 1.51	19 46 11.1	46 12.1	7.1628	7.648	2.71	3.22
25 17 29.6	238	3 48 3.16	48 3.46	19 46 17.3	46 18.2	7.1169	7.605	2.71	3.22
26 17 25.7	239	3 48 4 94	48 5.21	19 46 22.7	46 23.5	7.0656	7.554	2.71	3.22
27 17 21.8	240	3 48 6.51	48 6.74	19 46 27.6	46 28.3	7.0089	7.495	2.71	3.22
28 17 17.9	241	3 48 7.87	48 8.07	19 46 31.7	46 32.3	6.9403	7.426	2.70	3.22
29 17 14.0	242	3 48 9.02	48 9.19	19 46 35.1	46 35.6	6.8607	7.340	2.70	3.22
30 17 10.0	243	3 48 9.96	48 10.09	19 46 38.0	46 38.4	6.7659	7.240	2.70	3.22
31 17 6.1	244	3 48 10.70	48 10.80	+19 46 40.1	46 40.4	+6.6444	+ 7.097	−2.70	−3.22

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Sept. 1 17 2.2	245	3 48 11.23	48 11.30	+19 46 41.6	46 41.8	+6.4700	+ 6.883	−2.70	−3.22
2 16 58.2	246	3 48 11.55	48 11.58	19 46 42.3	46 42.4	6.1741	+ 6.444	2.70	3.22
3 16 54.3	247	3 48 11.66	48 11.66	19 46 42.4	46 42.3	+4.5406	− 6.240	2.69	3.22
4 16 50.4	248	3 48 11.56	48 11.53	19 46 41.8	46 41.7	−6.1534	6.771	2.69	3.22
5 16 46.4	249	3 48 11.25	48 11.18	19 46 40.7	46 40.5	6.4697	6.988	2.69	3.22
6 16 42.5	250	3 48 10.73	48 10.63	19 46 39.0	46 38.7	6.6340	7.154	2.69	3.22
7 16 38.6	251	3 48 10.01	48 9.87	19 46 36.6	46 36.2	6.7581	7.281	2.68	3.22
8 16 34.6	252	3 48 9.08	48 8.91	19 46 33.5	46 33.0	6.8587	7.373	2.68	3.22
9 16 30.7	253	3 48 7.93	48 7.73	19 46 29.8	46 29.2	6.9385	7.444	2.68	3.22
10 16 26.7	254	3 48 6.58	48 6.35	19 46 25.5	46 24.8	7.0030	7.505	2.68	3.22
11 16 22.8	255	3 48 5.03	48 4.77	19 46 20.6	46 19.8	7.0591	7.562	2.68	3.22
12 16 18.8	256	3 48 3.28	48 2.99	19 46 15.0	46 14.1	7.1100	7.618	2.67	3.21
13 16 14.9	257	3 48 1.32	48 0.99	19 46 8.7	46 7.7	7.1566	7.665	2.67	3.21
14 16 10.9	258	3 47 59.15	47 58.78	19 46 1.7	46 0.6	7.1986	7.705	2.67	3.20
15 16 6.9	259	3 47 56.77	47 56.38	19 45 54.1	45 52.9	7.2370	7.740	2.67	3.19
16 16 3.0	260	3 47 54.18	47 53.76	19 45 45.9	45 44.6	7.2714	7.771	2.67	3.19
17 15 59.0	261	3 47 51.39	47 50.94	19 45 37.1	45 35.7	7.3025	7.806	2.66	3.18
18 15 55.0	262	3 47 48.40	47 47.92	19 45 27.5	45 26.0	7.3316	7.840	2.66	3.17
19 15 51.0	263	3 47 45.21	47 44.69	19 45 17.2	45 15.6	7.3588	7.865	2.66	3.17
20 15 47.0	264	3 47 41.82	47 41.27	19 45 6.4	45 4.7	7.3845	7.887	2.66	3.16
21 15 43.0	265	3 47 38.23	47 38.65	19 44 55.0	44 53.2	7.4081	7.908	2.66	3.16
22 15 39.0	266	3 47 34.45	47 33.83	19 44 43.1	44 41.2	7.4305	7.930	2.65	3.15
23 15 35.0	267	3 47 30.47	47 29.82	19 44 30.5	44 28.5	7.4518	7.951	2.65	3.14
24 15 31.0	268	3 47 26.30	47 25.62	19 44 17.4	44 15.3	7.4721	7.971	2.65	3.13
25 15 27.0	269	3 47 21.93	47 21.22	19 44 3.6	44 1.4	7.4919	7.991	2.65	3.12
26 15 23.0	270	3 47 17.37	47 16.63	19 43 49.2	43 46.9	7.5091	8.007	2.65	3.11
27 15 19.0	271	3 47 12.63	47 11.86	19 43 34.3	43 31.9	7.5260	8.024	2.64	3.10
28 15 15.0	272	3 47 7.71	47 6.91	19 43 18.8	43 16.3	7.5418	8.041	2.63	3.09
29 15 11.0	273	3 47 2.60	47 1.78	19 43 2.6	43 0.0	7.5568	8.057	2.62	3.08
30 15 6.9	274	3 46 57.32	46 56.47	19 42 45.9	42 43.2	7.5717	8.073	2.61	3.07
Oct. 1 15 2.9	275	3 46 51.86	46 50.99	19 42 28.5	42 25.7	7.5863	8.088	2.61	3.06
2 14 58.8	276	3 46 46.21	46 45.31	19 42 10.6	42 7.7	7.6001	8.102	2.60	3.04
3 14 54.8	277	3 46 40.39	46 39.46	19 41 52.2	41 49.2	7.6132	8.115	2.60	3.03
4 14 50.7	278	3 46 34.40	46 33.44	19 41 33.2	41 30.1	7.6256	8.127	2.59	3.02
5 14 46.7	279	3 46 28.25	46 27.26	19 41 13.8	41 10.7	7.6373	8.138	2.59	3.01
6 14 42.7	280	3 46 21.92	46 20.91	19 40 53.8	40 50.6	7.6485	8.149	2.58	3.00
7 14 38.6	281	3 46 15.43	46 14.39	19 40 33.2	40 30.0	7.6595	8.160	2.57	3.00
8 14 34.6	282	3 46 8.77	46 7.71	19 40 12.1	40 8.8	7.6702	8.171	2.56	3.00
9 14 30.5	283	3 46 1.95	46 0.86	19 39 50.5	39 47.1	7.6805	8.182	2.55	3.00
10 14 26.5	284	3 45 54.96	45 53.85	19 39 28.4	39 24.9	7.6904	8.192	2.55	2.99
11 14 22.4	285	3 45 47.82	45 46.69	19 39 5.7	39 2.1	7.6999	8.202	2.54	2.99
12 14 18.4	286	3 45 40.53	45 39.37	19 38 42.5	38 38.8	7.7090	8.211	2.53	2.99
13 14 14.3	287	3 45 33.09	45 31.91	19 38 18.8	38 15.1	7.7178	8.220	2.52	2.99
14 14 10.3	288	3 45 25.50	45 24.30	19 37 54.6	37 50.8	7.7263	8.229	2.51	2.98
15 14 6.2	289	3 45 17.77	45 16.55	19 37 29.9	37 26.0	7.7343	8.238	2.50	2.98
16 14 2.1	290	3 45 9.89	45 8.65	19 37 4.8	37 0.8	7.7420	8.246	2.49	2.98
17 13 58.1	291	3 45 1.87	45 0.61	19 36 39.2	36 35.2	7.7493	8.253	2.48	2.97
18 13 54.0	292	3 44 53.72	44 52.44	19 36 13.2	36 9.1	7.7563	8.260	2.46	2.96
19 13 50.0	293	3 44 45.44	44 44.14	19 35 46.8	35 42.7	7.7630	8.267	2.45	2.95
20 13 45.9	294	3 44 37.04	44 35.72	19 35 20.0	35 15.8	7.7694	8.273	2.44	2.94
21 13 41.8	295	3 44 28.51	44 27.17	19 34 52.8	34 48.5	7.7756	8.279	2.42	2.93
22 13 37.8	296	3 44 19.86	44 18.50	19 34 25.2	34 20.9	7.7815	8.285	2.41	2.92
23 13 33.7	297	3 44 11.10	44 10.72	19 33 57.2	33 52.8	7.7871	8.291	2.39	2.90
24 13 29.6	298	3 44 2.22	44 0.82	19 33 28.9	33 24.5	7.7924	8.297	2.38	2.89
25 13 25.5	299	3 43 53.24	43 51.83	19 33 0.1	32 55.7	7.7975	8.303	2.36	2.87
26 13 21.4	300	3 43 44.15	43 42.73	19 32 30.9	32 26.4	7.8023	8.309	2.35	2.86
27 13 17.4	301	3 43 34.96	43 33.52	19 32 1.4	31 56.9	7.8069	8.314	2.34	2.85
28 13 13.3	302	3 43 25.68	43 24.23	19 31 31.7	31 27.1	7.8113	8.319	2.32	2.83
29 13 9.2	303	3 43 16.30	43 14.84	19 31 1.6	30 57.0	7.8155	8.323	2.31	2.82
30 13 5.1	304	3 43 6.85	43 5.38	19 30 31.2	30 26.5	7.8195	8.327	2.30	2.80
31 13 1.0	305	3 42 57.31	42 55.83	19 30 0.5	29 55.7	7.8233	8.331	2.28	2.78
32 12 57.0	306	3 42 47.68	42 46.19	+19 29 29.5	29 24.7	−7.8268	− 8.335	−2.26	−2.76

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Nov. 1 12 57.0	306	3 42 47.68	42 46.19	+19 29 29.5	29 24.7	−7.8268	− 8.335	−2.26	−2.71
2 12 52.9	307	3 42 37.98	42 36.48	19 28 58.1	28 53.3	7.8301	8.338	2.23	2.74
3 12 48.8	308	3 42 28.20	42 26.69	19 28 26.6	28 21.7	7.8332	8.341	2.20	2.72
4 12 44.7	309	3 42 18.36	42 16.84	19 27 54.9	27 50.0	7.8361	8.344	2.17	2.70
5 12 40.6	310	3 42 8.45	42 6.92	19 27 22.9	27 17.9	7.8389	8.347	−2.14	−2.68
6 12 36.5	311	3 41 58.49	41 56.95	19 26 50.8	26 45.8	7.8415	8.350		
7 12 32.4	312	3 41 48.47	41 46.92	19 26 18.4	26 13.4	7.8439	8.353		
8 12 28.3	313	3 41 38.39	41 36.83	19 25 45.8	25 40.8	7.8461	8.356		
9 12 24.2	314	3 41 28.26	41 26.70	19 25 12.9	25 7.8	7.8481	8.359		
10 12 20.1	315	3 41 18.09	41 16.52	19 24 39.8	24 34.7	7.8499	8.362		
11 12 16.0	316	3 41 7.87	41 6.30	19 24 6.6	24 1.5	7.8515	8.364		
12 12 11.8	317	3 40 57.62	40 56.05	19 23 33.3	23 28.2	7.8528	8.366		
13 12 7.7	318	3 40 47.35	40 45.78	19 23 0.0	22 54.9	7.8538	8.367		
14 12 3.6	319	3 40 37.06	40 35.48	19 22 26.5	22 21.4	7.8546	8.368		
15 11 59.5	320	3 40 26.75	40 25.17	19 21 52.9	21 47.8	7.8553	8.369		
16 11 55.4	321	3 40 16.42	40 14.84	19 21 19.2	21 14.1	7.8558	8.369		
17 11 51.3	322	3 40 6.08	40 4.50	19 20 45.4	20 40.3	7.8562	8.369		
18 11 47.2	323	3 39 55.73	39 54.15	19 20 11.6	20 6.5	7.8564	8.370		
19 11 43.1	324	3 39 45.37	39 43.79	19 19 37.8	19 32.7	7.8564	8.370		
20 11 39.0	325	3 39 35.02	39 33.44	19 19 4.0	18 58.9	7.8562	8.370		
21 11 34.9	326	3 39 24.69	39 23.11	19 18 30.2	18 25.1	7.8558	8.370		
22 11 30.8	327	3 39 14.37	39 12.80	19 17 56.4	17 51.3	7.8552	8.369		
23 11 26.7	328	3 39 4.06	39 2.49	19 17 22.6	17 17.5	7.8544	8.368		
24 11 22.6	329	3 38 53.77	38 52.21	19 16 48.8	16 43.7	7.8534	8.368		
25 11 18.5	330	3 38 43.51	38 41.96	19 16 15.2	16 10.1	7.8522	8.367		
26 11 14.4	331	3 38 33.28	38 31.73	19 15 41.7	15 36.6	7.8508	8.366		
27 11 10.3	332	3 38 23.09	38 21.54	19 15 8.2	15 3.1	7.8492	8.365		
28 11 6.2	333	3 38 12.94	38 11.40	19 14 34.7	14 29.7	7.8474	8.364		
29 11 2.1	334	3 38 2.83	38 1.30	19 14 1.4	13 56.4	7.8453	8.363		
30 10 58.0	335	3 37 52.78	37 51.26	19 13 28.1	13 23.1	7.8430	8.362	+2.08	+2.68
Dec. 1 10 53.9	336	3 37 42.77	37 41.26	19 12 55.1	12 50.1	7.8405	8.360	2.12	2.70
2 10 49.8	337	3 37 32.82	37 31.32	19 12 22.2	12 17.3	7.8378	8.357	2.16	2.72
3 10 45.7	338	3 37 22.94	37 21.45	19 11 49.5	11 44.6	7.8349	8.354	2.19	2.74
4 10 41.6	339	3 37 13.12	37 11.64	19 11 17.2	11 12.4	7.8319	8.351	2.22	2.76
5 10 37.5	340	3 37 3.37	37 1.90	19 10 45.0	10 40.2	7.8287	8.348	2.25	2.78
6 10 33.4	341	3 36 53.70	36 52.24	19 10 13.0	10 8.3	7.8253	8.345	2.28	2.80
7 10 29.3	342	3 36 44.10	36 42.65	19 9 41.2	9 36.5	7.8217	8.341	2.31	2.82
8 10 25.2	343	3 36 34.58	36 33.14	19 9 9.8	9 5.1	7.8179	8.337	2.34	2.84
9 10 21.1	344	3 36 25.16	36 23.74	19 8 38.6	8 34.0	7.8139	8.333	2.36	2.85
10 10 17.0	345	3 36 15.82	36 14.42	19 8 7.7	8 3.1	7.8097	8.329	2.38	2.86
11 10 13.0	346	3 36 6.58	36 5.20	19 7 37.1	7 32.6	7.8052	8.325	2.40	2.88
12 10 8.9	347	3 35 57.45	35 56.09	19 7 6.8	7 2.4	7.8005	8.320	2.42	2.89
13 10 4.8	348	3 35 48.41	35 47.07	19 6 36.7	6 32.3	7.7956	8.315	2.44	2.90
14 10 0.7	349	3 35 39.48	35 38.16	19 6 7.1	6 2.8	7.7904	8.310	2.45	2.91
15 9 56.7	350	3 35 30.64	35 29.33	19 5 37.9	5 33.6	7.7848	8.305	2.46	2.92
16 9 52.6	351	3 35 21.93	35 20.64	19 5 9.0	5 4.8	7.7788	8.299	2.48	2.94
17 9 48.5	352	3 35 13.34	35 12.07	19 4 40.5	4 36.3	7.7725	8.293	2.49	2.95
18 9 44.5	353	3 35 4.88	35 3.63	19 4 12.4	4 8.3	7.7659	8.287	2.51	2.96
19 9 40.4	354	3 34 56.56	34 55.33	19 3 44.8	3 40.7	7.7591	8.280	2.52	2.97
20 9 36.3	355	3 34 48.36	34 47.15	19 3 17.5	3 13.5	7.7520	8.273	2.53	2.98
21 9 32.3	356	3 34 40.29	34 39.10	19 2 50.8	2 46.9	7.7447	8.265	2.54	2.99
22 9 28.2	357	3 34 32.37	34 31.20	19 2 24.5	2 20.6	7.7371	8.257	2.55	3.00
23 9 24.2	358	3 34 24.59	34 23.44	19 1 58.7	1 54.8	7.7292	8.249	2.56	3.01
24 9 20.1	359	3 34 16.95	34 15.82	19 1 33.4	1 29.7	7.7210	8.240	2.57	3.02
25 9 16.0	360	3 34 9.45	34 8.35	19 1 8.6	1 5.0	7.7123	8.231	2.58	3.03
26 9 12.0	361	3 34 2.10	34 1.02	19 0 44.4	0 40.9	7.7032	8.222	2.59	3.04
27 9 7.9	362	3 33 54.91	33 53.85	19 0 20.6	0 17.2	7.6935	8.213	2.60	3.05
28 9 3.9	363	3 33 47.88	33 46.85	18 59 57.3	59 53.9	7.6833	8.203	2.60	3.06
29 8 59.8	364	3 33 41.02	33 40.01	18 59 34.6	59 31.3	7.6722	8.193	2.61	3.07
30 8 55.7	365	3 33 34.34	33 33.36	18 59 12.4	59 9.1	7.6612	8.183	2.61	3.08
31 8 51.7	366	3 33 27.82	33 26.86	+18 58 50.8	58 47.6	−7.6502	− 8.173	+2.61	+3.09

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.				Sidereal Date.	Apparent Right Ascension.					Apparent Declination.					Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
					At Sidereal 0h.			At Transit.		At Sidereal 0h.			At Transit.		In R. A.	In Dec.	In R. A.	In Dec.
	d.	h.	m.		h.	m.	s.	m.	s.	°	′	″	′	″				
Jan.	0	4	35.5	0	23	17	29.38	17	29.25	− 5	47	38.0	47	38.9	+7.4523	+ 8.285	+2.43	+3 24
	1	4	31.7	1	23	17	33.53	17	33.39	5	47	9.9	47	10.8	7.4646	8.295	2.43	3.24
	2	4	27.8	2	23	17	37.78	17	37.64	5	46	41.1	46	42.0	7.4764	8.305	2.43	3.23
	3	4	23.9	3	23	17	42.14	17	42.01	5	46	11.6	46	12.5	7.4877	8.315	2.42	3.23
	4	4	20.1	4	23	17	46.62	17	46.49	5	45	41.5	45	42.4	7.4985	8.325	2.42	3.22
	5	4	16.2	5	23	17	51.21	17	51.08	5	45	10.7	45	11.6	7.5085	8.335	2.42	3.22
	6	4	12.4	6	23	17	55.91	17	55.78	5	44	39.3	44	40.2	7.5182	8.344	2.42	3.21
	7	4	8.5	7	23	18	0.72	18	0.58	5	44	7.2	44	8.2	7.5277	8.353	2.41	3.21
	8	4	4.7	8	23	18	5.63	18	5.49	5	43	34.4	43	35.4	7.5370	8.362	2.41	3.20
	9	4	0.8	9	23	18	10.65	18	10.51	5	43	1.0	43	2.0	7.5459	8.370	2.41	3.20
	10	3	57.0	10	23	18	15.77	18	15.63	5	42	26.9	42	27.9	7.5547	8.378	2.40	3.19
	11	3	53.1	11	23	18	20.99	18	20.84	5	41	52.2	41	53.2	7.5633	8.386	2.40	3.18
	12	3	49.3	12	23	18	26.31	18	26.16	5	41	16.8	41	17.8	7.5716	8.394	2.39	3.17
	13	3	45.4	13	23	18	31.73	18	31.58	5	40	40.8	40	41.8	7.5796	8.401	2.39	3.17
	14	3	41.6	14	23	18	37.25	18	37.10	5	40	4.3	40	5.3	7.5873	8.408	2.38	3.16
	15	3	37.7	15	23	18	42.87	18	42.71	5	39	27.1	39	28.1	7.5948	8.415	2.38	3.16
	16	3	33.9	16	23	18	48.58	18	48.42	5	38	49.4	38	50.4	7.6021	8.422	2.37	3.15
	17	3	30.1	17	23	18	54.39	18	54.23	5	38	11.1	38	12.2	7.6092	8.429	2.37	3.14
	18	3	26.2	18	23	19	0.30	19	0.14	5	37	32.2	37	33.3	7.6160	8.435	2.36	3.14
	19	3	22.4	19	23	19	6.30	19	6.13	5	36	52.7	36	53.8	7.6226	8.441	2.35	3.13
	20	3	18.6	20	23	19	12.38	19	12.21	5	36	12.7	36	13.8	7.6290	8.447	2.34	3.12
	21	3	14.7	21	23	19	18.56	19	18.39	5	35	32.2	35	33.3	7.6351	8.453	2.33	3.12
	22	3	10.9	22	23	19	24.82	19	24.64	5	34	51.1	34	52.2	7.6411	8.459	2.32	3.11
	23	3	7.0	23	23	19	31.17	19	30.99	5	34	9.5	34	10.6	7.6469	8.464	2.31	3.10
	24	3	3.2	24	23	19	37.60	19	37.42	5	33	27.4	33	28.5	7.6525	8.469	2.30	3.09
	25	2	59.4	25	23	19	44.12	19	43.94	5	32	44.8	32	46.0	7.6579	8.474	2.29	3.08
	26	2	55.6	26	23	19	50.72	19	50.53	5	32	1.7	32	2.9	7.6631	8.479	2.28	3.07
	27	2	51.8	27	23	19	57.40	19	57.21	5	31	18.2	31	19.4	7.6682	8.484	2.27	3.06
	28	2	48.0	28	23	20	4.15	20	3.96	5	30	34.2	30	35.4	7.6731	8.488	2.26	3.05
	29	2	44.1	29	23	20	10.98	20	10.79	5	29	49.7	29	50.9	7.6778	8.493	2.25	3.04
	30	2	40.3	30	23	20	17.89	20	17.70	5	29	4.8	29	6.0	7.6824	8.497	2.24	3.03
	31	2	36.5	31	23	20	24.87	20	24.68	5	28	19.5	28	20.7	7.6869	8.501	2.23	3.02
Feb.	1	2	32.7	32	23	20	31.92	20	31.73	5	27	33.7	27	35.0	7.6912	8.505	2.22	3.00
	2	2	28.9	33	23	20	39.04	20	38.84	5	26	47.5	26	48.8	7.6954	8.509	2.21	2.99
	3	2	25.1	34	23	20	46.23	20	46.03	5	26	0.9	26	2.2	7.6995	8.513	2.20	2.98
	4	2	21.3	35	23	20	53.48	20	53.28	5	25	13.9	25	15.2	7.7034	8.516	2.19	2.97
	5	2	17.5	36	23	21	0.79	21	0.59	5	24	26.5	24	27.8	7.7072	8.519	2.18	2.95
	6	2	13.7	37	23	21	8.17	21	7.97	5	23	38.7	23	40.0	7.7109	8.522	2.17	2.94
	7	2	9.9	38	23	21	15.60	21	15.40	5	22	50.6	22	51.9	7.7144	8.525	2.16	2.93
	8	2	6.1	39	23	21	23.09	21	22.89	5	22	2.2	22	3.5	7.7178	8.528	2.15	2.92
	9	2	2.3	40	23	21	30.64	21	30.44	5	21	13.4	21	14.7	7.7211	8.531	2.13	2.90
	10	1	58.5	41	23	21	38.25	21	38.05	5	20	24.3	20	25.6	7.7243	8.534	2.12	2.89
	11	1	54.7	42	23	21	45.91	21	45.71	5	19	34.9	19	36.2	7.7273	8.537	2.11	2.88
	12	1	50.9	43	23	21	53.62	21	53.42	5	18	45.2	18	46.5	7.7302	8.540	2.09	2.87
	13	1	47.1	44	23	22	1.38	22	1.18	5	17	55.2	17	56.5	7.7330	8.542	2.07	2.85
	14	1	43.3	45	23	22	9.19	22	8.99	5	17	4.9	17	6.2	7.7356	8.545	2.05	2.83
	15	1	39.5	46	23	22	17.04	22	16.84	5	16	14.3	16	15.6	7.7381	8.547	2.03	2.81
	16	1	35.7	47	23	22	24.94	22	24.74	5	15	23.5	15	24.8	7.7405	8.549	2.01	2.78
	17	1	31.9	48	23	22	32.89	22	32.69	5	14	32.5	14	33.8	7.7428	8.551	1.99	2.75
	18	1	28.1	49	23	22	40.88	22	40.68	5	13	41.3	13	42.6	7.7449	8.553	1.97	2.73
	19	1	24.3	50	23	22	48.90	22	48.69	5	12	49.8	12	51.1	7.7470	9.555	1.95	2.70
	20	1	20.5	51	23	22	56.96	22	56.75	5	11	58.1	11	59.4	7.7490	8.557	1.92	2.67
	21	1	16.7	52	23	23	5.06	23	4.85	5	11	6.2	11	7.5	7.7508	8.558	1.89	+2.63
	22	1	12.9	53	23	23	13.19	23	12.98	5	10	14.1	10	15.4	7.7525	8.560	1.86	
	23	1	9.1	54	23	23	21.35	23	21.14	5	9	21.9	9	23.2	7.7541	8.561	1.83	
	24	1	5.3	55	23	23	29.54	23	29.33	5	8	29.5	8	30.8	7.7555	8.562	1.80	
	25	1	1.5	56	23	23	37.75	23	47.54	5	7	37.0	7	38.3	7.7569	8.563	1.77	
	26	0	57.7	57	23	23	45.99	23	45.78	5	6	44.4	6	45.7	7.7582	8.564	1.74	
	27	0	53.9	58	23	23	54.25	23	54.04	5	5	51.6	5	52.9	7.7594	8.565	1.70	
	28	0	50.1	59	23	24	2.54	24	2.33	5	4	58.7	5	0.0	7.7604	8.566	1.66	
	29	0	46.3	60	23	24	10 85	24	10.64	5	4	5.7	4	7.0	7.7614	8.566	+1.62	
	30	0	42.5	61	23	24	19.17	24	18.96	− 5	3	12.6	3	13.9	+7.7622	+ 8.567		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Mar. 1 0 46.3	60	23 24 10.85	24 10.64	− 5 4 5.7	4 7.0	+7.7614	+ 8.566	+1.62	
2 0 42.5	61	23 24 19.17	24 18.96	5 3 12.6	3 13.9	7.7622	8.567		
3 0 38.7	62	23 24 27.51	24 27.30	5 2 19.5	2 20.8	7.7630	8.567		
4 0 34.9	63	23 24 35.86	24 35.65	5 1 26.3	1 27.6	7.7636	8.568		
5 0 31.1	64	23 24 44.23	24 44.03	5 0 33.1	0 34.4	7.7642	8.568		
6 0 27.3	65	23 24 52.61	24 52.41	4 59 39.9	59 41.2	7.7646	8.568		
7 0 23.5	66	23 25 0.99	25 0.79	4 58 46.6	58 47.9	7.7650	8.568		
8 0 19.7	67	23 25 9.38	25 9.18	4 57 53.3	57 54.6	7.7653	8.568		
9 0 15.9	68	23 25 17.77	25 17.57	4 57 0.1	57 1.4	7.7655	8.568		
10 0 12.1	69	23 25 26.17	25 25.97	4 56 6.9	56 8.2	7.7655	8.568		
11 0 8.3	70	23 25 34.57	25 34.37	4 55 13.7	55 15.0	7.7656	8.568		
12 0 4.5	71	23 25 42.97	25 42.77	4 54 20.5	54 21.8	7.7655	8.567		
13 0 0.7	72	23 25 51.36	25 51.16	4 53 27.4	53 28.7	7.7654	8.567		
13 23 57.0	73	23 25 59.75	25 59.55	4 52 34.4	52 35.7	7.7651	8.566		
14 23 53.3	74	23 26 8.13	26 7.93	4 51 41.4	51 42.7	7.7648	8.566		
15 23 49.5	75	23 26 16.50	26 16.30	4 50 48.5	50 49.8	7.7643	8.565		
16 23 45.7	76	23 26 24.87	26 24.68	4 49 55.7	49 57.0	7.7638	8.564		
17 23 41.9	77	23 26 33.22	26 33.03	4 49 3.0	49 4.3	7.7632	8.563	−1.59	
18 23 38.1	78	23 26 41.56	26 41.37	4 48 10.4	48 11.7	7.7624	8.562	1.63	
19 23 34.3	79	23 26 49.88	26 49.69	4 47 18.0	47 19.2	7.7615	8.561	1.67	
20 23 30.5	80	23 26 58.18	26 57.99	4 46 25.7	46 26.9	7.7605	8.560	1.71	
21 23 26.7	81	23 27 6.46	27 6.27	4 45 33.6	45 34.8	7.7599	8.558	1.75	−2.62
22 23 22.9	82	23 27 14.73	27 14.54	4 44 41.6	44 42.8	7.7586	8.557	1.78	2.66
23 23 19.1	83	23 27 22.98	27 22.80	4 43 49.8	43 51.0	7.7572	8.556	1.81	2.69
24 23 15.3	84	23 27 31.20	27 31.02	4 42 58.2	42 59.4	7.7556	8.554	1.84	2.72
25 23 11.5	85	23 27 39.39	27 39.21	4 42 6.8	42 8.0	7.7542	8.552	1.87	2.74
26 23 7.7	86	23 27 47.55	27 47.37	4 41 15.6	41 16.8	7.7525	8.550	1.89	2.76
27 23 3.9	87	23 27 55.68	27 55.50	4 40 24.7	40 25.9	7.7507	8.548	1.91	2.78
28 23 0.1	88	23 28 3.77	28 3.59	4 39 34.0	39 35.2	7.7488	8.546	1.93	2.80
29 22 56.3	89	23 28 11.83	28 11.65	4 38 43.5	38 44.7	7.7469	8.543	1.95	2.81
30 22 52.5	90	23 28 19.85	28 19.68	4 37 53.3	37 54.4	7.7448	8.541	1.96	2.83
31 22 48.7	91	23 28 27.83	28 27.66	4 37 3.4	37 4.5	7.7427	8.539	1.98	2.84
Apr. 1 22 44.9	92	23 28 35.77	28 35.60	4 36 13.7	36 14.8	7.7405	8.536	2.00	2.86
2 22 41.1	93	23 28 43.68	28 43.51	4 35 24.4	35 25.5	7.7382	8.533	2.01	2.87
3 22 37.3	94	23 28 51.54	28 51.37	4 34 35.4	34 36.5	7.7358	8.530	2.03	2.89
4 22 33.5	95	23 28 59.35	28 59.18	4 33 46.7	33 47.8	7.7333	8.527	2.05	2.90
5 22 29.7	96	23 29 7.12	29 6.95	4 32 58.3	32 59.4	7.7307	8.524	2.07	2.92
6 22 25.9	97	23 29 14.85	29 14.68	4 32 10.3	32 11.4	7.7280	8.521	2.08	2.93
7 22 22.1	98	23 29 22.53	29 22.37	4 31 22.6	31 23.6	7.7251	8.518	2.10	2.95
8 22 18.3	99	23 29 30.15	29 29.99	4 30 35.3	30 36.3	7.7222	8.515	2.11	2.96
9 22 14.5	100	23 29 37.72	29 37.56	4 29 48.3	29 49.3	7.7192	8.512	2.12	2.97
10 22 10.6	101	23 29 45.24	29 45.08	4 29 1.7	29 2.7	7.7160	8.508	2.13	2.98
11 22 6.8	102	23 29 52.70	29 52.54	4 28 15.5	28 16.5	7.7127	8.505	2.15	2.99
12 22 3.0	103	23 30 0.10	29 59.94	4 27 29.7	27 30.7	7.7093	8.501	2.16	3.00
13 21 59.2	104	23 30 7.44	30 7.28	4 26 44.3	26 45.3	7.7058	8.497	2.17	3.01
14 21 55.4	105	23 30 14.73	30 14.58	4 25 59.3	26 0.3	7.7021	8.493	2.18	3.02
15 21 51.6	106	23 30 21.96	30 21.81	4 25 14.8	25 15.7	7.6983	8.489	2.19	3.03
16 21 47.8	107	23 30 29.12	30 28.97	4 24 30.7	24 31.6	7.6944	8.485	2.20	3.04
17 21 44.0	108	23 30 36.22	30 36.07	4 23 47.0	23 47.9	7.6904	8.480	2.21	3.05
18 21 40.1	109	23 30 43.25	30 43.10	4 23 3.8	23 4.7	7.6863	8.475	2.22	3.06
19 21 36.3	110	23 30 50.21	30 50.06	4 22 21.1	22 22.0	7.6820	8.470	2.23	3.07
20 21 32.5	111	23 30 57.10	30 56.95	4 21 38.8	21 39.7	7.6776	8.465	2.24	3.08
21 21 28.7	112	23 31 3.92	31 3.78	4 20 57.0	20 57.9	7.6731	8.460	2.25	3.09
22 21 24.9	113	23 31 10.67	31 10.53	4 19 15.7	20 16.6	7.6684	8.455	2.26	3.09
23 21 21.1	114	23 31 17.34	31 17.20	4 19 34.9	19 35.7	7.6636	8.450	2.27	3.10
24 21 17.3	115	23 31 23 94	31 23.80	4 18 54.7	18 55.5	7.6586	8.444	2.28	3.11
25 21 13.5	116	23 31 30.46	31 30.33	4 18 15.0	18 15.8	7.6534	8.438	2.29	3.12
26 21 9.6	117	23 31 36.90	31 36.77	4 17 35.8	17 36.6	7.6481	8.432	2.29	3.12
27 21 5.8	118	23 31 43.27	31 43.14	4 16 57.1	16 57.9	7.6426	8.426	2.30	3.13
28 21 2.0	119	23 31 49.55	31 49.42	4 16 19.0	16 19.8	7.6370	8.420	2.31	3.14
29 20 58.1	120	23 31 55.75	31 55.63	4 15 41.5	15 42.3	7.6311	8.414	2.31	3.14
30 20 54.3	121	23 32 1.86	32 1.74	− 4 15 4.5	15 5.3	+7.6251	+ 8.407	−2.32	−3.15

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
May 1 20 50.4	122	23 32 7.89	32 7.77	− 4 14 28.1	14 28.8	+7.6189	+ 8.400	−2.33	−3.15
2 20 46.6	123	23 32 13.83	32 13.71	4 13 52.3	13 53.0	7.6125	8.393	2.33	3.16
3 20 42.8	124	23 32 19.68	32 19.57	4 13 17.1	13 17.8	7.6058	8.386	2.34	3.16
4 20 38.9	125	23 32 25.44	32 25.33	4 12 42.4	12 43.1	7.5990	8.378	2.34	3.17
5 20 35.1	126	23 32 31.12	32 31.01	4 12 8.4	12 9.1	7.5919	8.370	2.35	3.17
6 20 31.3	127	23 32 36.70	32 36.59	4 11 34.9	11 35.5	7.5847	8.362	2.35	3.18
7 20 27.4	128	23 32 42.19	32 42.09	4 11 2.1	11 2.7	7.5772	8.354	2.36	3.18
8 20 23.6	129	23 32 47.58	32 47.48	4 10 29.9	10 30.5	7.5696	8.345	2.36	3.19
9 20 19.7	130	23 32 52.88	32 52.78	4 9 58.4	9 59.0	7.5618	8.336	2.37	3.19
10 20 15.9	131	23 32 58.08	32 57.98	4 9 27.5	9 28.1	7.5538	8.327	2.37	3.20
11 20 12.1	132	23 33 3.19	33 3.10	4 8 57.2	8 57.7	7.5455	8.318	2.38	3.20
12 20 8.2	133	23 33 8.20	33 8.11	4 8 27.6	8 28.1	7.5369	8.308	2.38	3.21
13 20 4.4	134	23 33 13.11	33 13.02	4 7 58.7	7 59.2	7.5280	8.298	2.39	3.21
14 20 0.5	135	23 33 17.92	33 17.83	4 7 30.4	7 30.9	7.5189	8.288	2.39	3.22
15 19 56.7	136	23 33 22.63	33 22.54	4 7 2.8	7 3.3	7.5096	8.277	2.40	3.22
16 19 52.8	137	23 33 27.24	33 27.16	4 6 35.8	6 36.3	7.5001	8.266	2.40	3.23
17 19 48.9	138	23 33 31.75	33 31.67	4 6 9.6	6 10.0	7.4903	8.255	2.41	3.23
18 19 45.1	139	23 33 36.15	33 36.07	4 5 44.0	5 44.4	7.4802	8.244	2.41	3.23
19 19 41.2	140	23 33 40.45	33 40.37	4 5 19.1	5 19.5	7.4698	8.232	2.42	3.24
20 19 37.3	141	23 33 44.64	33 44.56	4 4 54.9	4 55.3	7.4589	8.219	2.42	3.24
21 19 33.5	142	23 33 48.73	33 48.66	4 4 31.4	4 31.8	7.4476	8.206	2.43	3.24
22 19 29.6	143	23 33 52.71	33 52.64	4 4 8.6	4 9.0	7.4359	8.192	2.43	3.24
23 19 25.8	144	23 33 56.58	33 56.51	4 3 46.5	3 46.9	7.4237	8.178	2.43	3.25
24 19 21.9	145	23 34 0.35	34 0.28	4 3 25.2	3 25.6	7.4111	8.163	2.43	3.25
25 19 18.0	146	23 34 4.01	34 3.95	4 3 4.6	3 4.9	7.3980	8.148	2.44	3.25
26 19 14.2	147	23 34 7.55	34 7.49	4 2 44.7	2 45.0	7.3844	8.132	2.44	3.25
27 19 10.3	148	23 34 10.98	34 10.92	4 2 25.5	2 25.8	7.3702	8.115	2.44	3.26
28 19 6.4	149	23 34 14.30	34 14.24	4 2 7.1	2 7.4	7.3554	8.098	2.44	3.26
29 19 2.6	150	23 34 17.51	34 17.45	4 1 49.4	1 49.7	7.3399	8.079	2.45	3.26
30 18 58.7	151	23 34 20.60	34 20.54	4 1 32.5	1 32.8	7.3239	8.060	2.45	3.26
31 18 54.8	152	23 34 23.58	34 23.53	4 1 16.3	1 16.6	7.3073	8.039	2.45	3.27
June 1 18 50.9	153	23 34 26.45	34 26.40	4 1 0.8	1 1.1	7.2896	8.018	2.45	3.27
2 18 47.0	154	23 34 29.20	34 29.15	4 0 46.1	0 46.3	7.2713	7.997	2.46	3.27
3 18 43.1	155	23 34 31.84	34 31.80	4 0 32.1	0 32.3	7.2523	7.974	2.46	3.27
4 18 39.2	156	23 34 34.36	34 34.32	4 0 18.9	0 19.1	7.2323	7.950	2.46	3.27
5 18 35.3	157	23 34 36.76	34 36.72	4 0 6.5	0 6.7	7.2112	7.923	2.46	3.27
6 18 31.4	158	23 34 39.04	34 39.00	3 59 54.8	59 55.0	7.1890	7.894	2.47	3.27
7 18 27.5	159	23 34 41.21	34 41.17	3 59 43.9	59 44.1	7.1653	7.863	2.47	3.27
8 18 23.6	160	23 34 43.26	34 43.22	3 59 33.8	59 34.0	7.1395	7.829	2.47	3.28
9 18 19.7	161	23 34 45.20	34 45.17	3 59 24.4	59 24.6	7.1133	7.792	2.47	3.28
10 18 15.8	162	23 34 47.02	34 46.99	3 59 15.8	59 15.9	7.0849	7.752	2.47	3.28
11 18 11.9	163	23 34 48.72	34 48.69	3 59 7.9	59 8.0	7.0547	7.709	2.47	3.28
12 18 8.0	164	23 34 50.30	34 50.27	3 59 0.8	59 0.9	7.0226	7.663	2.47	3.28
13 18 4.1	165	23 34 51.76	34 51.73	3 58 54.5	58 54.6	6.9885	7.613	2.47	3.28
14 18 0.2	166	23 34 53.10	34 53.07	3 58 49.0	58 49.1	6.9500	7.554	2.47	3.28
15 17 56.3	167	23 34 54.32	34 54.30	3 58 44.2	58 44.3	6.9074	7.484	2.47	3.28
16 17 52.4	168	23 34 55.42	34 55.40	3 58 40.2	58 40.3	6.8602	7.400	2.47	3.28
17 17 48.5	169	23 34 56.41	34 56.39	3 58 37.0	58 37.1	6.8071	7.296	2.47	3.28
18 17 44.6	170	23 34 57.28	34 57.26	3 58 34.6	58 34.6	6.7474	7.160	2.47	3.28
19 17 40.7	171	23 34 58.02	34 58.01	3 58 32.9	58 32.9	6.6773	6.960	2.47	3.28
20 17 36.8	172	23 34 58.64	34 58.63	3 58 32.0	58 32.0	6.5936	+ 6.572	2.47	3.28
21 17 32.8	173	23 34 59.14	34 59.13	3 58 31.8	58 31.8	6.4899	− 6.217	2.47	3.28
22 17 28.9	174	23 34 59.52	34 59.51	3 58 32.4	58 32.4	6.3535	6.847	2.47	3.28
23 17 25.0	175	23 34 59.78	34 59.77	3 58 33.8	58 33.8	6.1507	7.094	2.47	3.28
24 17 21.0	176	23 34 59.92	34 59.92	3 58 35.9	58 35.9	+5.7580	7.249	2.47	3.28
25 17 17.1	177	23 34 59.94	34 59.94	3 58 38.9	58 38.9	−5.4156	7.363	2.47	3.28
26 17 13.2	178	23 34 59.85	34 59.85	3 58 42.6	58 42.5	6.0389	7.453	2.47	3.28
27 17 9.2	179	23 34 59.64	34 59.65	3 58 47.1	58 47.0	6.2849	7.527	2.47	3.27
28 17 5.3	180	23 34 59.31	34 59.32	3 58 52.3	58 52.2	6.4396	7.590	2.47	3.27
29 17 1.3	181	23 34 58.85	34 58.86	3 58 58.3	58 58.2	6.5545	7.645	2.46	3.27
30 16 57.4	182	23 34 58.28	34 58.29	3 59 5.0	59 4.9	6.6418	7.685	2.46	3.27
31 16 53.4	183	23 34 57.59	34 57.60	− 3 59 12.5	59 12.4	−6.7152	− 7.731	−2.46	−3.27

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
July 1 16 53.4	183	23 34 57.59	34 57.60	− 3 59 12.5	59 12.4	−6.7152	− 7.731	−2.46	−3.27
2 16 49.5	184	23 34 56.78	34 56.79	3 59 20.7	59 20.6	6.7780	7.772	2.46	3.27
3 16 45.5	185	23 34 55.86	34 55.87	3 59 29.7	59 29.6	6.8323	7.810	2.46	3.26
4 16 41.6	186	23 34 54.82	34 54.84	3 59 39.4	59 39.3	6.8805	7.845	2.46	3.26
5 16 37.6	187	23 34 53.67	34 53.69	3 59 49.9	59 49.7	6.9235	7.877	2.45	3.26
6 16 33.7	188	23 34 52.40	34 52.42	4 0 1.1	0 0.9	6.9630	7.906	2.45	3.26
7 16 29.7	189	23 34 51.02	34 51.04	4 0 13.0	0 12.8	6.9988	7.932	2.45	3.25
8 16 25.8	190	23 34 49.53	34 49.55	4 0 25.6	0 25.4	7.0308	7.956	2.45	3.25
9 16 21.8	191	23 34 47.92	34 47.95	4 0 39.0	0 38.8	7.0610	7.979	2.44	3.25
10 16 17.9	192	23 34 46.20	34 46.23	4 0 53.0	0 52.8	7.0891	8.001	2.44	3.25
11 16 13.9	193	23 34 44.37	34 44.40	4 1 7.8	1 7.6	7.1159	8.021	2.44	3.24
12 16 9.9	194	23 34 42.42	34 42.45	4 1 23.3	1 23.0	7.1412	8.040	2.44	3.24
13 16 6.0	195	23 34 40.36	34 40.39	4 1 39.5	1 39.2	7.1651	8.059	2.43	3.23
14 16 2.0	196	23 34 38.19	34 38.23	4 1 56.4	1 56.1	7.1874	8.077	2.43	3.23
15 15 58.0	197	23 34 35.91	34 35.95	4 2 13.9	2 13.6	7.2085	8.094	2.43	3.22
16 15 54.1	198	23 34 33.52	34 33.56	4 2 32.1	2 31.8	7.2283	8.110	2.42	3.22
17 15 50.1	199	23 34 31.03	34 31.07	4 2 50.9	2 50.6	7.2472	8.125	2.42	3.21
18 15 46.1	200	23 34 28.43	34 28.47	4 3 10.5	3 10.2	7.2652	8.140	2.41	3.21
19 15 42.1	201	23 34 25.73	34 25.77	4 3 30.7	3 30.4	7.2823	8.154	2.41	3.20
20 15 38.2	202	23 34 22.92	34 22.97	4 3 51.6	3 51.3	7.2986	8.168	2.40	3.20
21 15 34.2	203	23 34 20.01	34 20.06	4 4 13.1	4 12.7	7.3141	8.181	2.40	3.19
22 15 30.2	204	23 34 16.99	34 17.04	4 4 35.3	4 34.9	7.3289	8.193	2.39	3.19
23 15 26.2	205	23 34 13.87	34 13.92	4 4 58.0	4 57.6	7.3431	8.205	2.39	3.18
24 15 22.2	206	23 34 10.65	34 10.70	4 5 21.4	5 21.0	7.3566	8.216	2.38	3.18
25 15 18.2	207	23 34 7.33	34 7.39	4 5 45.4	5 45.0	7.3695	8.227	2.38	3.17
26 15 14.2	208	23 34 3.91	34 3.97	4 6 10.0	6 9.6	7.3818	8.237	2.37	3.16
27 15 10.3	209	23 34 0.40	34 0.46	4 6 35.1	6 34.7	7.3936	8.247	2.37	3.15
28 15 6.3	210	23 33 56.79	33 56.85	4 7 0.9	7 0.4	7.4049	8.257	2.36	3.15
29 15 2.3	211	23 33 53.09	33 53.15	4 7 27.2	7 26.7	7.4157	8.266	2.36	3.14
30 14 58.3	212	23 33 49.30	33 49.37	4 7 54.1	7 53.6	7.4260	8.275	2.35	3.13
31 14 54.3	213	23 33 45.42	33 45.49	4 8 21.5	8 21.0	7.4358	8.284	2.34	3.12
Aug. 1 14 50.3	214	23 33 41.45	33 41.52	4 8 49.5	8 49.0	7.4451	8.292	2.34	3.12
2 14 46.3	215	23 33 37.39	33 37.46	4 9 18.0	9 17.5	7.4540	8.300	2.33	3.11
3 14 42.3	216	23 33 33.25	33 33.32	4 9 47.0	9 46.5	7.4627	8.308	2.33	3.10
4 14 38.3	217	23 33 29.02	33 29.09	4 10 16.6	10 16.1	7.4713	8.316	2.32	3.09
5 14 34.3	218	23 33 24.71	33 24.79	4 10 46.7	10 46.1	7.4795	8.323	2.32	3.08
6 14 30.3	219	23 33 20.31	33 20.39	4 11 17.2	11 16.6	7.4875	8.330	2.31	3.07
7 14 26.3	220	23 33 15.84	33 15.92	4 11 48.2	11 47.6	7.4952	8.337	2.30	3.06
8 14 22.2	221	23 33 11.29	33 11.37	4 12 19.7	12 19.1	7.5027	8.343	2.29	3.05
9 14 18.2	222	23 33 6.66	33 6.74	4 12 51.6	12 51.0	7.5100	8.349	2.28	3.04
10 14 14.2	223	23 33 1.96	33 2.04	4 13 24.0	13 23.4	7.5170	8.355	2.27	3.03
11 14 10.2	224	23 32 57.18	32 57.27	4 13 56.8	13 56.2	7.5237	8.361	2.26	3.02
12 14 6.2	225	23 32 52.33	32 52.42	4 14 30.1	14 29.5	7.5302	8.366	2.24	3.00
13 14 2.2	226	23 32 47.41	32 47.50	4 15 3.7	15 3.0	7.5365	8.371	2.23	2.99
14 13 58.2	227	23 32 42.42	32 42.51	4 15 37.8	15 37.1	7.5425	8.376	2.22	2.97
15 13 54.2	228	23 32 37.36	32 37.45	4 16 12.3	16 11.6	7.5482	8.381	2.21	2.96
16 13 50.1	229	23 32 32.24	32 32.34	4 16 47.1	16 46.4	7.5537	8.386	2.19	2.94
17 13 46.1	230	23 32 27.05	32 27.15	4 17 22.3	17 21.6	7.5590	8.390	2.18	2.93
18 13 42.1	231	23 32 21.80	32 21.90	4 17 57.8	17 57.1	7.5640	8.394	2.16	2.91
19 13 38.1	232	23 32 16.49	32 16.59	4 18 33.7	18 33.0	7.5688	8.398	2.14	2.89
20 13 34.0	233	23 32 11.13	32 11.23	4 19 9.9	19 9.2	7.5733	8.402	2.12	2.87
21 13 30.0	234	23 32 5.71	32 5.82	4 19 46.4	19 45.7	7.5776	8.406	2.11	2.85
22 13 26.0	235	23 32 0.23	32 0.34	4 20 23.2	20 22.5	7.5817	8.409	2.09	2.83
23 13 21.9	236	23 31 54.71	31 54.82	4 21 0.3	20 59.6	7.5855	8.412	2.07	2.81
24 13 17.9	237	23 31 49.14	31 49.25	4 21 37.6	21 36.9	7.5892	8.415	2.05	2.79
25 13 13.9	238	23 31 43.52	31 43.63	4 22 15.2	22 14.5	7.5926	8.418	2.03	2.77
26 13 9.9	239	23 31 37.86	31 37.97	4 22 53.0	22 52.3	7.5959	8.421	2.01	2.74
27 13 5.8	240	23 31 32.16	31 32.28	4 23 31.1	23 30.4	7.5989	8.423	1.99	2.71
28 13 1.8	241	23 31 26.42	31 26.54	4 24 9.3	24 8.6	7.6018	8.425	1.96	−2.67
29 12 57.8	242	23 31 20.64	31 20.76	4 24 47.8	24 47.1	7.6045	8.427	1.94	
30 12 53.7	243	23 31 14.83	31 14.95	4 25 26.4	25 25.7	7.6070	8.429	1.92	
31 12 49.7	244	23 31 8.98	31 9.10	− 4 26 5.2	26 4.4	−7.6094	− 8.431	−1.90	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t^2.	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Sept. 1 12 45.7	245	23 31 3.11	31 3.23	− 4 26 44.2	26 43.4	−7.6116	− 8.433	−1.87	
2 12 41.7	246	23 30 57.21	30 57.33	4 27 23.3	27 22.5	7.6137	8.435	1.83	
3 12 37.6	247	23 30 51.28	30 51.40	4 28 2.5	28 1.7	7.6156	8.436	1.78	
4 12 33.6	248	23 30 45.32	30 45.44	4 28 41.8	28 41.0	7.6174	8.437	1.73	
5 12 29.6	249	23 30 39.34	30 39.46	4 29 21.2	29 20.4	7.6190	8.438	−1.67	
6 12 25.6	250	23 30 33.34	30 33.47	4 30 0.7	29 59.9	7.6204	8.438		
7 12 21.5	251	23 30 27.32	30 27.45	4 30 40.3	30 39.5	7.6216	8.439		
8 12 17.5	252	23 30 21.28	30 21.41	4 31 19.9	31 19.1	7.6226	8.439		
9 12 13.5	253	23 30 15.23	30 15.36	4 31 59.5	31 58.7	7.6235	8.440		
10 12 9.4	254	23 30 9.17	30 9.30	4 32 39.1	32 38.3	7.6244	8.440		
11 12 5.4	255	23 30 3.10	30 3.23	4 33 18.8	33 18.0	7.6251	8.440		
12 12 1.4	256	23 29 57.02	29 57.15	4 33 58.5	33 57.7	7.6256	8.439		
13 11 57.3	257	23 29 50.94	29 51.07	4 34 38.1	34 37.3	7.6260	8.439		
14 11 53.3	258	23 29 44.86	29 44.99	4 35 17.7	35 16.9	7.6261	8.438		
15 11 49.3	259	23 29 38.78	29 38.91	4 35 57.3	35 56.5	7.6260	8.438		
16 11 45.2	260	23 29 32.70	29 32.83	4 36 36.8	36 36.0	7.6257	8.437		
17 11 41.2	261	23 29 26.62	29 26.75	4 37 16.1	37 15.3	7.6252	8.436		
18 11 37.2	262	23 29 20.55	29 20.68	4 37 55.4	37 54.6	7.6244	8.435		
19 11 33.1	263	23 29 14.49	29 14.62	4 38 34.5	38 33.7	7.6234	8.434		
20 11 29.1	264	23 29 8.45	29 8.58	4 39 13.5	39 12.7	7.6223	8.432		
21 11 25.1	265	23 29 2.42	29 2.55	4 39 52.4	39 51.6	7.6210	8.430	+1.61	
22 11 21.0	266	23 28 56.41	28 56.54	4 40 31.1	40 30.3	7.6196	8.428	1.68	
23 11 17.0	267	23 28 50.42	28 50.55	4 41 9.6	41 8.8	7.6180	8.426	1.73	+2.68
24 11 13.0	268	23 28 44.45	28 44.58	4 41 47.9	41 47.1	7.6162	8.424	1.78	2.72
25 11 8.9	269	23 28 38.51	28 38.64	4 42 26.0	42 25.2	7.6143	8.421	1.82	2.75
26 11 4.9	270	23 28 32.59	28 32.72	4 43 3.9	43 3.1	7.6123	8.418	1.85	2.77
27 11 0.9	271	23 28 26.71	28 26.84	4 43 41.5	43 40.7	7.6101	8.415	1.88	2.79
28 10 56.8	272	23 28 20.86	28 20.99	4 44 18.9	44 18.1	7.6087	8.412	1.91	2.81
29 10 52.8	273	23 28 15.04	28 15.17	4 44 56.0	44 55.2	7.6051	8.409	1.94	2.83
30 10 48.8	274	23 28 9.26	28 9.39	4 45 32.9	45 32.1	7.6024	8.406	1.97	2.85
Oct. 1 10 44.7	275	23 28 3.51	28 3.64	4 46 9.4	46 8.6	7.5994	8.402	2.00	2.87
2 10 40.7	276	23 27 57.81	27 57.94	4 46 45.6	46 44.8	7.5962	8.398	2.02	2.89
3 10 36.7	277	23 27 52.15	27 52.28	4 47 21.5	47 20.7	7.5928	8.394	2.04	2.91
4 10 32.7	278	23 27 46.54	27 46.67	4 47 57.1	47 56.3	7.5892	8.390	2.06	2.93
5 10 28.7	279	23 27 40.97	27 41.10	4 48 32.3	48 31.5	7.5854	8.386	2.08	2.95
6 10 24.7	280	23 27 35.45	27 35.57	4 49 7.1	49 6.3	7.5813	8.382	2.10	2.97
7 10 20.7	281	23 27 29.98	27 30.10	4 49 41.6	49 40.8	7.5771	8.377	2.12	2.99
8 10 16.6	282	23 27 24.56	27 24.68	4 50 15.7	50 14.9	7.5727	8.372	2.14	3.01
9 10 12.6	283	23 27 19.20	27 19.32	4 50 49.3	50 48.5	7.5681	8.367	2.16	3.02
10 10 8.6	284	23 27 13.90	27 14.02	4 51 22.6	51 21.8	7.5634	8.361	2.18	3.04
11 10 4.6	285	23 27 8.66	27 8.78	4 51 55.4	51 54.7	7.5584	8.355	2.19	3.05
12 10 0.6	286	23 27 3.48	27 3.60	4 52 27.8	52 27.1	7.5532	8.349	2.21	3.06
13 9 56.6	287	23 26 58.37	26 58.49	4 52 59.7	52 59.0	7.5478	8.343	2.22	3.07
14 9 52.6	288	23 26 53.32	26 53.43	4 53 31.1	53 30.4	7.5420	8.336	2.23	3.08
15 9 48.5	289	23 26 48.34	26 48.45	4 54 2.1	54 1.4	7.5360	8.329	2.24	3.09
16 9 44.5	290	23 26 43.43	26 43.54	4 54 32.6	54 31.9	7.5297	8.322	2.26	3.10
17 9 40.5	291	23 26 38.60	26 38.71	4 55 2.6	55 1.9	7.5230	8.314	2.27	3.11
18 9 36.5	292	23 26 33.84	26 33.95	4 55 32.1	55 31.4	7.5160	8.306	2.28	3.12
19 9 32.5	293	23 26 29.16	26 29.27	4 56 1.0	56 0.3	7.5087	8.298	2.29	3.13
20 9 28.5	294	23 26 24.55	26 24.66	4 56 29.3	56 28.6	7.5011	8.290	2.30	3.14
21 9 24.5	295	23 26 20.03	26 20.13	4 56 57.1	56 56.4	7.4932	8.281	2.31	3.15
22 9 20.5	296	23 26 15.59	26 15.69	4 57 24.3	57 23.7	7.4851	8.272	2.32	3.16
23 9 16.4	297	23 26 11.24	26 11.34	4 57 50.9	57 50.3	7.4765	8.262	2.32	3.16
24 9 12.4	298	23 26 6.98	26 7.08	4 58 16.9	58 16.3	7.4675	8.252	2.33	3.17
25 9 8.4	299	23 26 2.80	26 2.90	4 58 42.4	58 41.8	7.4580	8.242	2.34	3.18
26 9 4.4	300	23 25 58.71	25 58.80	4 59 7.2	59 6.6	7.4481	8.231	2.35	3.19
27 9 0.4	301	23 25 54.71	25 54.80	4 59 31.4	59 30.8	7.4378	8.220	2.35	3.19
28 8 56.4	302	23 25 50.81	25 50.90	4 59 55.0	59 54.4	7.4271	8.208	2.36	3.20
29 8 52.4	303	23 25 47.00	25 47.09	5 0 17.9	0 17.3	7.4160	8.196	2.37	3.21
30 8 48.4	304	23 25 43.29	25 43.38	5 0 40.2	0 39.6	7.4047	8.183	2.38	3.22
31 8 44.4	305	23 25 39.68	25 39.76	5 1 1.8	1 1.3	7.3930	8.170	2.38	3.22
32 8 40.5	306	23 25 36.16	25 36.24	− 5 1 22.8	1 22.3	−7.3810	− 8.156	+2.39	+3.23

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Mean Solar Time of Meridian Transit.	Sidereal Date.	Apparent Right Ascension.		Apparent Declination.		Log. Coefficient of t in Sidereal Minutes.		Log. Coefficient of t².	
		At Sidereal 0h.	At Transit.	At Sidereal 0h.	At Transit.	In R. A.	In Dec.	In R. A.	In Dec.
d. h. m.		h. m. s.	m. s.	° ′ ″	′ ″				
Nov. 1 8 40.5	306	23 25 36.16	25 36.24	− 5 1 22.8	1 22.3	−7.3810	− 8.156	+2.39	+3.23
2 8 36.5	307	23 25 32.74	25 32.82	5 1 43.1	1 42.6	7.3684	8.142	2.40	3.23
3 8 32.5	308	23 25 29.43	25 29.51	5 2 2.8	2 2.3	7.3552	8.126	2.41	3.24
4 8 28.5	309	23 25 26.22	25 26.30	5 2 21.7	2 21.2	7.3413	8.110	2.41	3.24
5 8 24.6	310	23 25 23.11	25 23.18	5 2 39.9	2 39.5	7.3267	8.093	2.42	3.25
6 8 20.6	311	23 25 20.11	25 20.18	5 2 57.4	2 57.0	7.3113	8.075	2.42	3.25
7 8 16.6	312	23 25 17.22	25 17.29	5 3 14.2	3 13.8	7.2952	8.056	2.43	3.26
8 8 12.6	313	23 25 14.43	25 14.50	5 3 30.2	3 29.8	7.2781	8.036	2.43	3.26
9 8 8.6	314	23 25 11.76	25 11.82	5 3 45.5	3 45.1	7.2600	8.015	2.44	3.26
10 8 4.7	315	23 25 9.20	25 9.26	5 4 0.1	3 59.7	7.2409	7.993	2.44	3.27
11 8 0.7	316	23 25 6.75	25 6.81	5 4 13.9	4 13.6	7.2210	7.970	2.45	3.27
12 7 56.7	317	23 25 4.41	25 4.47	5 4 27.0	4 26.7	7.1995	7.945	2.45	3.27
13 7 52.7	318	23 25 2.19	25 2.24	5 4 39.3	4 39.0	7.1767	7.918	2.46	3.27
14 7 48.8	319	23 25 0.08	25 0.13	5 4 50.9	4 50.6	7.1522	7.888	2.46	3.28
15 7 44.8	320	23 24 58.09	24 58.14	5 5 1.7	5 1.4	7.1260	7.856	2.47	3.28
16 7 40.8	321	23 24 56.22	24 56.26	5 5 11.7	5 11.5	7.0980	7.822	2.47	3.28
17 7 36.9	322	23 24 54.47	24 54.51	5 5 20.9	5 20.7	7.0680	7.785	2.47	3.28
18 7 32.9	323	23 24 52.84	24 52.88	5 5 29.4	5 29.2	7.0358	7.744	2.48	3.28
19 7 28.9	324	23 24 51.33	24 51.36	5 5 37.0	5 36.8	7.0012	7.700	2.48	3.29
20 7 25.0	325	23 24 49.94	24 49.97	5 5 43.9	5 43.7	6.9642	7.652	2.48	3.29
21 7 21.0	326	23 24 48.68	24 48.71	5 5 49.9	5 49.8	6.9217	7.594	2.48	3.29
22 7 17.1	327	23 24 47.54	24 47.56	5 5 55.2	5 55.1	6.8740	7.527	2.49	3.29
23 7 13.1	328	23 24 46.52	24 46.54	5 5 59.7	5 59.6	6.8205	7.448	2.49	3.29
24 7 9.2	329	23 24 45.63	24 45.65	5 6 3.4	6 3.3	6.7594	7.352	2.49	3.29
25 7 5.2	330	23 24 44.86	24 44.88	5 6 6.3	6 6.2	6.6882	7.227	2.49	3.29
26 7 1.3	331	23 24 44.21	24 44.22	5 6 8.3	6 8.3	6.6031	7.052	2.49	3.30
27 6 57.3	332	23 24 43.69	24 43.70	5 6 9.5	6 9.5	6.4972	− 6.752	2.49	3.30
28 6 53.4	333	23 24 43.30	24 43.31	5 6 9.9	6 9.9	6.3568	Inf. Neg.	2.49	3.30
29 6 49.4	334	23 24 43.03	24 43.04	5 6 9.5	6 9.5	6.1480	+ 6.752	2.49	3.30
30 6 45.5	335	23 24 42.89	24 42.89	5 6 8.3	6 8.4	−5.7274	7.052	2.50	3.30
Dec. 1 6 41.5	336	23 24 42.88	24 42.88	5 6 6.2	6 6.3	+5.4296	7.229	2.50	3.30
2 6 37.6	337	23 24 42.99	24 42.99	5 6 3.4	6 3.5	6.0846	7.354	2.50	3.30
3 6 33.7	338	23 24 43.23	24 43.22	5 5 59.7	5 59.8	6.3205	7.450	2.50	3.30
4 6 29.8	339	23 24 43.59	24 43.58	5 5 55.3	5 55.5	6.4725	7.530	2.50	3.30
5 6 25.9	340	23 24 44.08	24 44.06	5 5 50.0	5 50.2	6.5854	7.597	2.50	3.30
6 6 22.0	341	23 24 44.70	24 44.68	5 5 43.9	5 44.1	6.6749	7.655	2.50	3.30
7 6 18.0	342	23 24 45.45	24 45.43	5 5 37.0	5 37.2	6.7482	7.707	2.50	3.30
8 6 14.1	343	23 24 46.32	24 46.30	5 5 29.2	5 29.4	6.8120	7.753	2.50	3.30
9 6 10.2	344	23 24 47.32	24 47.29	5 5 20.7	5 21.0	6.8678	7.794	2.50	3.30
10 6 6.3	345	23 24 48.45	24 48.42	5 5 11.3	5 11.6	6.9171	7.832	2.50	3.30
11 6 2.4	346	23 24 49.71	24 49.68	5 5 1.1	5 1.4	6.9609	7.866	2.50	3.30
12 5 58.5	347	23 24 51.10	24 51.07	5 4 50.1	4 50.4	7.0011	7.898	2.50	3.30
13 5 54.6	348	23 24 52.61	24 52.57	5 4 38.3	4 38.6	7.0380	7.928	2.50	3.30
14 5 50.7	349	23 24 54.25	24 54.21	5 4 25.7	4 26.0	7.0721	7.956	2.50	3.30
15 5 46.8	350	23 24 56.02	24 55.98	5 4 12.3	4 12.7	7.1033	7.982	2.50	3.30
16 5 42.9	351	23 24 57.91	24 57.86	5 3 58.1	3 58.5	7.1331	8.007	2.50	3.29
17 5 39.0	352	23 24 59.93	24 59.88	5 3 43.1	3 43.5	7.1605	8.030	2.50	3.29
18 5 35.1	353	23 25 2.08	25 2.03	5 3 27.2	3 27.6	7.1862	8.052	2.50	3.29
19 5 31.2	354	23 25 4.36	25 4.30	5 3 10.5	3 10.9	7.2102	8.072	2.50	3.29
20 5 27.3	355	23 25 6.76	25 6.70	5 2 53.1	2 53.6	7.2330	8.092	2.50	3.29
21 5 23.4	356	23 25 9.28	25 9.22	5 2 34.9	2 35.4	7.2545	8.111	2.49	3.29
22 5 19.5	357	23 25 11.93	25 11.86	5 2 15.9	2 16.4	7.2750	8.129	2.49	3.28
23 5 15.6	358	23 25 14.70	25 14.63	5 1 56.1	1 56.6	7.2943	8.146	2.49	3.28
24 5 11.7	359	23 25 17.59	25 17.52	5 1 35.6	1 36.1	7.3127	8.163	2.49	3.28
25 5 7.8	360	23 25 20.60	25 20.52	5 1 14.3	1 14.8	7.3301	8.178	2.49	3.28
26 5 3.9	361	23 25 23 74	25 23.66	5 0 52.2	0 52.7	7.3467	8.193	2.49	3.28
27 5 0.0	362	23 25 27.00	25 26.92	5 0 29.4	0 30.0	7.3626	8.207	2.49	3.28
28 4 56.1	363	23 25 30.37	25 30.28	5 0 5.8	0 6.4	7.3777	8.221	2.48	3.27
29 4 52.3	364	23 25 33.86	25 33.77	4 59 41.4	59 42.0	7.3922	8.234	2.48	3.27
30 4 48.5	365	23 25 37.47	25 37.38	4 59 16.3	59 16.9	7.4060	8.247	2.48	3.27
31 4 44.7	366	23 25 41.20	25 41.11	− 4 58 50.4	58 51.0	+7.4191	+ 8.259	+2.48	+3.27

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

0h. Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETER.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
d.	"	"	"	"	"	"	s.	s.	s.
1	6.73	7.74	4.27	2.62	7.71	2.51	0.19	0.52	0.15
6	7.26	7.97	4.22	2.82	7.94	2.49	0.20	0.53	0.15
11	8.03	8.22	4.17	3.13	8.19	2.46	0.21	0.54	0.15
16	9.15	8.50	4.13	3.56	8.47	2.43	0.24	0.55	0.15
21	10.62	8.80	4.09	4.13	8.77	2.41	0.28	0.57	0.14
26	12.13	9.12	4.05	4.73	9.09	2.39	0.32	0.59	0.14
31	13.00	9.47	4.01	5.06	9.43	2.36	0.34	0.61	0.14
36	12.81	9.86	3.97	4.98	9.82	2.34	0.34	0.63	0.14
41	11.86	10.27	3.93	4.59	10.23	2.31	0.32	0.66	0.14
46	10.77	10.76	3.89	4.19	10.72	2.29	0.29	0.70	0.13
51	9.79	11.29	3.85	3.80	11.25	2.27	0.26	0.73	0.13
56	8.98	11.88	3.82	3.49	11.84	2.25	0.24	0.78	0.13
61	8.33	12.53	3.78	3.24	12.48	2.23	0.22	0.83	0.13
66	7.82	13.25	3.75	3.05	13.20	2.20	0.21	0.88	0.13
71	7.41	14.07	3.72	2.88	14.02	2.19	0.20	0.95	0.13
76	7.06	15.01	3.68	2.75	14.96	2.17	0.18	1.02	0.13
81	6.80	16.05	3.66	2.64	16.00	2.16	0.18	1.10	0.13
86	6.59	17.24	3.63	2.57	17.19	2.14	0.17	1.20	0.13
91	6.46	18.58	3.60	2.51	18.51	2.12	0.16	1.30	0.13
96	6.41	20.08	3.57	2.49	20.01	2.10	0.16	1.42	0.13
101	6.46	21.72	3.55	2.51	21.64	2.09	0.17	1.54	0.13
106	6.68	23.51	3.52	2.60	23.42	2.07	0.18	1.67	0.13
111	7.10	25.36	3.50	2.76	25.27	2.06	0.19	1.80	0.13
116	7.76	27.14	3.48	3.02	27.04	2.05	0.21	1.92	0.13
121	8.66	28.64	3.46	3.37	28.53	2.04	0.24	2.01	0.13
126	9.79	29.62	3.44	3.81	29.51	2.02	0.27	2.06	0.12
131	11.13	29.86	3.42	4.33	29.75	2.01	0.31	2.05	0.12
136	12.53	29.34	3.41	4.88	29.23	2.01	0.35	1.99	0.13
141	13.93	28.13	3.39	5.42	28.03	2.00	0.39	1.88	0.13
146	15.04	26.48	3.38	5.85	26.38	1.99	0.41	1.76	0.13
151	15.57	24.62	3.37	6.06	24.53	1.99	0.42	1.63	0.13
156	15.35	22.75	3.36	5.98	22.67	1.98	0.41	1.51	0.13
161	14.42	20.97	3.35	5.61	20.89	1.97	0.38	1.38	0.13
166	13.12	19.34	3.34	5.11	19.27	1.97	0.35	1.28	0.13
171	11.72	17.88	3.33	4.57	17.81	1.96	0.31	1.18	0.13
176	10.41	16.61	3.33	4.05	16.55	1.96	0.28	1.10	0.13
181	9.23	15.45	3.33	3.59	15.39	1.96	0.25	1.03	0.13
186	8.24	14.43	3.33	3.21	14.38	1.96	0.22	0.97	0.13
191	7.46	13.53	3.33	2.90	13.48	1.96	0.21	0.91	0.13
196	6.90	12.74	3.33	2.68	12.69	1.96	0.19	0.86	0.13
201	6.56	12.03	3.33	2.55	11.99	1.96	0.18	0.82	0.13
206	6.41	11.39	3.34	2.49	11.35	1.97	0.17	0.78	0.13
211	6.40	10.83	3.35	2.49	10.79	1.97	0.17	0.74	0.13
216	6.50	10.33	3.36	2.53	10.29	1.98	0.17	0.71	0.13
221	6.69	9.87	3.37	2.60	9.83	1.99	0.18	0.68	0.13
226	6.94	9.45	3.38	2.70	9.42	1.99	0.18	0.65	0.13
231	7.26	9.08	3.40	2.83	9.05	2.00	0.19	0.63	0.12
236	7.66	8.74	3.42	2.98	8.71	2.01	0.20	0.60	0.12
241	8.14	8.42	3.44	3.17	8.39	2.02	0.21	0.58	0.12
246	8.72	8.14	3.46	3.40	8.11	2.04	0.23	0.56	0.13
251	9.45	7.89	3.49	3.68	7.86	2.06	0.25	0.53	0.13
256	10.56	7.64	3.52	4.11	7.61	2.07	0.27	0.51	0.13
261	11.38	7.40	3.55	4.43	7.37	2.09	0.29	0.50	0.13
266	12.55	7.18	3.59	4.88	7.15	2.11	0.32	0.48	0.13
271	13.00	6.99	3.63	5.06	6.96	2.14	0.33	0.46	0.13
276	12.50	6.82	3.67	4.87	6.79	2.16	0.32	0.45	0.13
281	11.14	6.66	3.71	4.34	6 64	2.18	0.29	0.43	0.13
286	9.86	6.52	3.76	3.73	6.50	2.21	0.25	0.42	0.13
291	8.33	6.39	3.81	3.24	6.37	2.25	0.21	0.41	0.13
296	7.47	6.26	3.87	2.91	6.24	2.28	0.19	0.40	0.13

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

0h. Sidereal Date.	HORIZONTAL PARALLAXES.			VERTICAL SEMIDIAMETER.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	☿	♀	♂	☿	♀	♂	☿	♀	♂
d.	"	"	"	"	"	"	s.	s.	s.
301	6.84	6.14	3.93	2.66	6.12	2.32	0.18	0.40	0.14
306	6.43	6.04	4.00	2.50	6.02	2.36	0.17	0.39	0.14
311	6.18	5.94	4.07	2.40	5.92	2.40	0.16	0.38	0.14
316	6.02	5.84	4.15	2.34	5.82	2.44	0.16	0.38	0.14
321	5.94	5.76	4.23	2.31	5.74	2.49	0.16	0.38	0.15
326	5.92	5.68	4.31	2.30	5.66	2.54	0.16	0.37	0.15
331	5.96	5.61	4.41	2.32	5.59	2.60	0.17	0.37	0.15
336	6.07	5.54	4.51	2.36	5.52	2.66	0.17	0.37	0.16
341	6.24	5.48	4.62	2.43	5.46	2.74	0.18	0.37	0.16
346	6.50	5.42	4.73	2.54	5.40	2.79	0.19	0.37	0.16
351	6.89	5.36	4.86	2.68	5.34	2.86	0.19	0.37	0.17
356	7.44	5.32	4.99	2.90	5.30	2.94	0.21	0.37	0.17
361	8.24	5.27	5.14	3.21	5.25	3.03	0.23	0.37	0.18
366	9.40	5.23	5.30	3.66	5.21	3.12	0.25	0.37	0.18
0h. Sidereal Date.	♃	♄	♅	♃	♄	♅	♃	♄	♅
d.	"	"	"	"	"	"	s.	s.	s.
1	1.71	1.07	0.45	18.59	9.75	1.77	1.32	0.73	0.14
11	1.66	1.07	0.45	18.03	9.70	1.76	1.29	0.72	0.14
21	1.61	1.06	0.45	17.53	9.64	1.75	1.25	0.72	0.14
31	1.57	1.05	0.44	17.10	9.55	1.73	1.22	0.71	0.13
41	1.54	1.04	0.44	16.72	9.43	1.71	1.19	0.71	0.13
51	1.51	1.02	0.44	16.40	9.29	1.70	1.17	0.70	0.13
61	1.48	1.00	0.43	16.14	9.14	1.69	1.15	0.69	0.13
71	1.46	0.98	0.43	15.94	8.97	1.67	1.14	0.67	0.13
81	1.45	0.97	0.43	15.79	8.81	1.66	1.13	0.66	0.13
91	1.44	0.95	0.42	15.70	8.65	1.65	1.13	0.65	0.13
101	1.44	0.93	0.42	15.66	8.49	1.65	1.13	0.64	0.13
111	1.44	0.92	0.42	15.67	8.35	1.64	1.13	0.63	0.13
121	1.45	0.90	0.42	15.74	8.22	1.64	1.14	0.62	0.13
131	1.46	0.89	0.42	15.86	8.10	1.63	1.15	0.61	0.13
141	1.47	0.88	0.42	16.03	8.01	1.63	1.17	0.60	0.13
151	1.49	0.87	0.42	16.25	7.92	1.64	1.18	0.59	0.13
161	1.52	0.86	0.42	16.53	7.86	1.64	1.21	0.59	0.13
171	1.55	0.86	0.42	16.86	7.81	1.65	1.24	0.58	0.13
181	1.58	0.85	0.43	17.24	7.79	1.66	1.26	0.58	0.13
191	1.62	0.85	0.43	17.68	7.78	1.66	1.30	0.58	0.13
201	1.67	0.85	0.43	18.18	7.79	1.68	1.34	0.58	0.13
211	1.72	0.86	0.44	18.71	7.81	1.69	1.38	0.58	0.13
221	1.77	0.86	0.44	19.30	7.86	1.70	1.43	0.58	0.13
231	1.83	0.87	0.44	19.92	7.92	1.72	1.47	0.59	0.13
241	1.89	0.88	0.44	20.56	8.00	1.73	1.52	0.59	0.14
251	1.95	0.89	0.45	21.20	8.10	1.75	1.57	0.60	0.14
261	2.01	0.90	0.45	21.83	8.21	1.76	1.61	0.61	0.14
271	2.06	0.92	0.45	22.42	8.36	1.78	1.66	0.62	0.14
281	2.10	0.93	0.46	22.89	8.50	1.79	1.69	0.63	0.14
291	2.14	0.95	0.46	23.22	8.65	1.80	1.71	0.64	0.14
301	2.15	0.97	0.46	23.38	8.81	1.80	1.72	0.65	0.14
311	2.15	0.99	0.46	23.36	8.98	1.81	1.71	0.66	0.14
321	2.13	1.00	0.46	23.16	9.14	1.81	1.69	0.67	0.14
331	2.10	1.02	0.46	22.81	9.29	1.81	1.67	0.69	0.14
341	2.05	1.04	0.46	22.32	9.43	1.80	1.63	0.70	0.14
351	2.00	1.05	0.46	21.73	9.55	1.80	1.59	0.71	0.14
361	1.94	1.06	0.46	21.09	9.62	1.79	1.54	0.71	0.14
371	1.88	1.06	0.46	20.39	9.66	1.78	1.49	0.72	0.14

NOTE. — For Neptune the Horizontal Parallax = 0".28 (before 152d.)
" " " " = 0".29 (between 152d. and 194d. and after 247d.)
" " " " = 0".30 (between 194d. and 247d.)

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	9.9
Jan. 1.0	+.1931082	1188	—.8844026	4159	—.3838157	7791	281 19 35.0	37.6	—0.07	926625
1.5	.2016783	6882	.8827909	8044	.3831164	0795	281 50 10.0	12.4	—0.01	26621
2.0	.2102321	2417	.8811106	1241	.3823870	3501	282 20 45.1	47.4	+0.05	26624
2.5	.2187692	7785	.8793620	3755	.3816278	5909	282 51 20.1	22.3	0.12	26633
3.0	.2272886	2975	.8775451	5586	.3808390	8021	283 21 55.0	57.1	0.19	26648
3.5	+.2357898	7984	—.8756600	6735	—.3800207	9838	283 52 29.8	31.8	+0.26	926668
4.0	.2442723	2805	.8737070	7205	.3791729	1360	284 23 4.5	6.5	0.32	26694
4.5	.2527356	7434	.8716861	6996	.3782957	2588	284 53 39.1	41.0	0.38	26726
5.0	.2611788	1863	.8695976	6111	.3773892	3523	285 24 13.6	15.4	0.43	26764
5.5	.2696014	6086	.8674415	4550	.3764534	4165	285 54 47.9	49.6	0.48	26808
6.0	+.2780028	0096	—.8652182	2318	—.3754883	4514	286 25 22.2	23.8	+0.53	926859
6.5	.2863824	3888	.8629278	9414	.3744941	4572	286 55 56.3	57.8	0.57	26917
7.0	.2947395	7456	.8605706	5843	.3734710	4342	287 26 30.4	31.8	0.61	26982
7.5	.3030735	0793	.8581468	1605	.3724190	3822	287 57 4.3	5.6	0.64	27054
8.0	.3113840	3894	.8556567	6705	.3713381	3014	288 27 38.1	39.3	0.66	27132
8.5	+.3196707	7657	—.8531004	1142	—.3702285	1919	288 58 11.8	12.9	+0.67	927218
9.0	.3279325	9372	.8504781	4920	.3690904	0539	289 28 45.5	46.5	0.68	27310
9.5	.3361686	1730	.8477898	8037	.3679237	8873	289 59 19.0	19.9	0.69	27408
10.0	.3443785	3825	.8450359	0499	.3667286	6924	290 29 52.4	53.2	0.69	27514
10.5	.3525617	5653	.8422165	2306	.3655051	4690	291 0 25.7	26.4	0.67	27628
11.0	+.3607173	7206	—.8393319	3461	—.3642534	2175	291 30 58.9	59.5	+0.65	927749
11.5	.3688449	8479	.8363825	3968	.3629735	9377	292 1 32.0	32.5	0.62	27877
12.0	.3769440	9466	.8333685	3829	.3616656	6300	292 32 5.1	5.5	0.59	28011
12.5	.3850142	0165	.8302900	3045	.3603297	2943	293 2 38.0	38.3	0.54	28152
13.0	.3930548	0567	.8271470	1616	.3589659	9307	293 33 10.9	11.1	0.49	28300
13.5	+.4010653	0668	—.8239398	9545	—.3575744	5394	294 3 43.7	43.8	+0.43	928456
14.0	.4090456	0468	.8206687	6836	.3561552	1204	294 34 16.4	16.4	0.38	28619
14.5	.4169945	9954	.8173339	3489	.3547083	6737	295 4 49.1	49.1	0.32	28788
15.0	.4249113	9119	.8139358	9510	.3532339	1995	295 35 21.7	21.6	0.25	28963
15.5	.4327954	7957	.8104745	4898	.3517321	6979	296 5 54.2	54.0	0.18	29144
16.0	+.4406462	6462	—.8069503	9658	—.3502030	1691	296 36 26.6	26.3	+0.11	929331
16.5	.4484630	4627	.8033633	3789	.3486467	6130	297 6 58.9	58.5	+0.04	29524
17.0	.4562453	2447	.7997137	7295	.3470632	0298	297 37 31.2	30.7	—0.02	29723
17.5	.4639926	9917	.7960015	0174	.3454526	4195	298 8 3.3	2.7	0.08	29927
18.0	.4717042	7030	.7922273	2434	.3438151	7823	298 38 35.4	34.7	0.15	30136
18.5	+.4793798	3783	—.7883915	4078	—.3421509	1184	299 9 7.4	6.6	—0.21	930350
19.0	.4870183	0165	.7844944	5109	.3404598	4276	299 39 39.3	38.4	0.26	30570
19.5	.4946194	6174	.7805362	5529	.3387423	7104	300 10 11.1	10.2	0.32	30794
20.0	.5021822	1799	.7765170	5339	.3369984	9668	300 40 42.8	41.8	0.37	31023
20.5	.5097063	7037	.7724372	4542	.3352282	1969	301 11 14.4	13.4	0.40	31257
21.0	+.5171908	1879	—.7682974	3146	—.3334318	4008	301 41 45.8	44.7	—0.43	931495
21.5	.5246351	6319	.7640977	1150	.3316092	5785	302 12 17.1	16.0	0.45	31737
22.0	.5320390	0355	.7598382	8557	.3297606	7302	302 42 48.2	47.0	0.47	31983
22.5	.5394017	3979	.7555193	5369	.3278865	8564	303 13 19.2	17.9	0.49	32234
23.0	.5467225	7184	.7511415	1593	.3259869	9571	303 43 50.1	48.7	0.50	32488
23.5	+.5540010	9967	—.7467051	7231	—.3240616	0321	304 14 20.8	19.3	—0.50	932746
24.0	.5612367	2321	.7422105	2287	.3221109	0818	304 44 51.3	49.7	0.50	33008
24.5	.5684290	4241	.7376581	6765	.3201352	1064	305 15 21.5	19.8	0.47	33273
25.0	.5755768	5717	.7330484	0670	.3181346	1062	305 45 51.5	49.7	0.44	33542
25.5	.5826793	6740	.7283816	4003	.3161092	0811	306 16 21.2	19.3	0.40	33814
26.0	+.5897363	7307	—.7236581	6770	—.3140590	0313	306 46 50.7	48.7	—0.37	934090
26.5	.5967473	7414	.7188783	8974	.3119845	9571	307 17 19.9	17.8	0.33	34369
27.0	.6037118	7057	.7140426	0619	.3098858	8588	307 47 48.9	46.7	0.29	34652
27.5	.6106292	6229	.7091515	1710	.3077629	7362	308 18 17.6	15.3	0.23	34939
28.0	.6174992	4927	.7042055	2252	.3056161	5898	308 48 46.1	43.7	0.17	35230
28.5	+.6243211	3144	—.6992048	2247	—.3034456	4196	309 19 14.1	11.6	—0.10	935524
29.0	.6310943	0874	.6941502	1703	.3012515	2259	309 49 41.8	39.2	—0.04	35821
29.5	.6378182	8111	.6890418	0621	.2990341	0088	310 20 9.4	6.8	+0.03	36123
30.0	.6444925	4852	.6838801	9006	.2967937	7688	310 50 36.6	33.9	0.09	36429
30.5	.6511167	1093	.6786655	6862	.2945305	5059	311 21 3.5	0.7	0.16	36739
31.0	+.6576900	6824	—.6733986	4195	—.2922445	2203	311 51 30.0	27.1	+0.22	937053

Note. — The accented letters correspond to the mean equinox and equator of January 0d.0.

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	9.9
Jan. 31.5	+.6642119	2041	—.6680800	1011	—.2899359	9120	312 21 56.2	53.2	+0.28	937372
Feb. 1.0	.6706820	6741	.6627102	7315	.2876052	5817	312 52 22.0	18.9	0.33	37696
1.5	.6770999	0919	.6572894	3109	.2852524	2292	313 22 47.5	44.3	0.39	38024
2.0	.6834649	4567	.6518178	8395	.2828776	8548	313 53 12.5	9.2	0.44	38357
2.5	.6897769	7685	.6462963	3182	.2804811	4586	314 23 37.3	34.0	0.48	38694
3.0	+.6960359	0274	—.6407251	7472	—.2780630	0409	314 53 61.6	58.2	+0.52	939036
3.5	.7022415	2329	.6351046	1269	.2756235	6017	315 24 25.6	22.2	0.55	39384
4.0	.7083931	3843	.6294355	4580	.2731627	1413	315 54 49.1	45.6	0.58	39738
4.5	.7144901	4812	.6237184	7411	.2706815	6604	316 25 12.4	8.8	0.60	40096
5.0	.7205318	5227	.6179538	9768	.2681796	1589	316 55 35.2	31.5	0.61	40460
5.5	+.7265178	5085	—.6121421	1653	—.2656574	6370	317 25 57.7	53.9	+0.62	940830
6.0	.7324478	4384	.6062834	3069	.2631152	0952	317 56 19.8	15.9	0.62	41205
6.5	.7383211	3116	.6003779	4016	.2605530	5333	318 26 41.6	37.6	0.60	41586
7.0	.7441373	1278	.5944265	4505	.2579705	9512	318 56 62.9	58.8	0.58	41973
7.5	.7498964	8865	.5884296	4538	.2553683	3493	319 27 24.0	19.9	0.55	42366
8.0	+.7555984	5884	—.5823879	4124	—.2527466	7280	319 57 44.6	40.4	+0.52	942764
8.5	.7612426	2325	.5763020	3267	.2501055	0872	320 28 5.0	0.8	0.48	43167
9.0	.7668286	8183	.5701719	1969	.2474452	4273	320 58 25.0	20.7	0.44	43576
9.5	.7723560	3455	.5639979	0231	.2447660	7484	321 28 44.7	40.3	0.38	44992
10.0	.7778243	8137	.5577805	8060	.2420681	0509	321 58 64.0	59.5	0.32	44414
10.5	+.7832335	2228	—.5515202	5459	—.2393515	3346	322 29 23.1	18.5	+0.26	944841
11.0	.7885826	5717	.5452178	2438	.2366168	6003	322 59 41.7	37.0	0.20	45273
11.5	.7938714	8603	.5388737	9000	.2338640	8478	323 29 60.1	55.4	0.13	45711
12.0	.7990997	0885	.5324885	5151	.2310932	0774	324 0 18.0	13.2	+0.06	46155
12.5	.8042673	2560	.5260625	0894	.2283046	2891	324 30 35.8	31.0	—0.02	46604
13.0	+.8093732	3617	—.5195959	6231	—.2254985	4834	325 0 53.1	48.2	—0.09	947057
13.5	.8144174	4057	.5130891	1166	.2226749	6601	325 31 10.3	5.4	0.15	47515
14.0	.8193994	3876	.5065423	5701	.2198342	8198	326 1 27.0	22.0	0.21	47978
14.5	.8243192	3073	.4999568	9849	.2169765	9625	326 31 43.5	38.4	0.27	48445
15.0	.8291760	1639	.4933329	3613	.2141020	0884	327 1 59.6	54.4	0.33	48916
15.5	+.8339695	9572	—.4866706	6993	—.2112110	1978	327 32 15.5	10.2	—0.39	949392
16.0	.8386993	6869	.4799711	0001	.2083036	2908	328 2 30.9	25.5	0.44	49872
16.5	.8433651	3526	.4732345	2638	.2053803	3679	328 32 46.1	40.7	0.48	50356
17.0	.8479665	9538	.4664616	4913	.2024412	4292	329 2 60.9	55.4	0.52	50843
17.5	.8525033	4905	.4596526	6826	.1994863	4747	329 33 15.5	10.0	0.55	51333
18.0	+.8569749	9620	—.4528078	8382	—.1965161	5049	330 3 29.7	24.1	—0.57	951827
18.5	.8613810	3680	.4459278	9585	.1935306	5198	330 33 43.7	38.1	0.58	52323
19.0	.8657211	7080	.4390133	0444	.1905299	5196	331 3 57.3	51.6	0.59	52822
19.5	.8699949	9819	.4320649	0963	.1875145	5046	331 34 10.5	4.7	0.59	53323
20.0	.8742022	1893	.4250833	1150	.1844845	4751	332 4 23.3	17.4	0.59	53826
20.5	+.8783426	3298	—.4180691	1010	—.1814402	4312	332 34 35.8	29.9	—0.57	954332
21.0	.8824156	4029	.4110229	0551	.1783822	3737	333 4 47.9	41.9	0.55	54840
21.5	.8864212	4086	.4039448	9772	.1753105	3024	333 34 59.6	53.6	0.52	55350
22.0	.8903588	3463	.3968357	8684	.1722252	2176	334 5 10.8	4.7	0.49	55862
22.5	.8942283	2159	.3896961	7290	.1691265	1193	334 35 21.7	15.6	0.45	56376
23.0	+.8980292	0169	—.3825265	5597	—.1660149	0082	335 5 32.2	26.0	—0.41	956892
23.5	.9017614	7492	.3753276	3610	.1628903	8841	335 35 42.2	36.0	0.35	57409
24.0	.9054244	4124	.3681000	1336	.1597532	7475	336 5 51.8	45.5	0.29	57929
24.5	.9090182	0063	.3608441	8779	.1566037	5985	336 35 61.0	54.6	0.23	58449
25.0	.9125422	5305	.3535606	5946	.1534423	4377	337 6 9.7	3.2	0.17	58972
25.5	+.9159964	9848	—.3462501	2843	—.1502691	2650	337 36 18.0	11.5	—0.11	959495
26.0	.9193805	3691	.3389134	9478	.1470846	0811	338 6 25.8	19.2	—0.05	60020
26.5	.9226943	6830	.3315510	5856	.1438889	8859	338 36 33.1	26.5	+0.02	60547
27.0	.9259376	9265	.3241635	1983	.1406823	6799	339 6 40.0	33.3	0.08	61076
27.5	.9291102	0993	.3167515	7865	.1374651	4632	339 36 46.4	39.7	0.14	61606
28.0	+.9322117	2010	—.3093156	3508	—.1342375	2362	340 6 52.2	45.4	+0.19	962138
28.5	.9352421	2316	.3018564	8917	.1309999	9991	340 36 57.5	50.7	0.25	62672
Mar. 1.0	.9382012	1909	.2943747	4102	.1277527	7524	341 6 62.3	55.4	0.30	63208
1.5	.9410890	0789	.2868709	9065	.1244960	4962	341 36 66.6	59.7	0.35	63746
2.0	.9439051	8953	.2793456	3814	.1212301	2309	342 7 10.3	3.3	0.40	64286
2.5	+.9466493	6397	—.2717995	8354	—.1179551	9564	342 37 13.4	6.4	+0.43	964828

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	9.9
Mar. 3.0	+.9493216	3123	—.2642330	2691	—.1146714	6733	843 7 16.1	9.0	+0.46	965373
3.5	.9519222	9131	.2566469	6831	.1113792	3816	343 37 18.3	11.2	0.48	65921
4.0	.9544505	4417	.2490420	0784	.1080787	0816	344 7 19.9	12.7	0.49	66471
4.5	.9569065	8979	.2414187	4550	.1047702	7736	344 37 21.0	13.8	0.50	67024
5.0	.9592901	2818	.2337772	8139	.1014540	4579	345 7 21.5	14.2	0.50	67580
5.5	+.9616011	5929	—.2261181	1549	— 0981301	1345	345 37 21.3	14.0	+0.49	968140
6.0	.9638393	8315	.2184423	4793	.0947991	8040	346 7 20.7	13.3	0.48	68703
6.5	.9660046	:9970	.2107502	7873	.0914608	4662	346 37 19.7	12.2	0.45	69268
7.0	.9680971	0898	.2030425	0798	.0881160	1219	347 7 18.0	10.4	0 42	69836
7.5	.9701174	1103	.1953200	3574	.0847646	7710	347 37 15.9	8.3	0.38	70407
8.0	+.9720648	0580	—.1875829	6205	—.0814071	4140	348 7 13.2	5.5	+0.34	970981
8.5	.9739391	9325	.1798317	8694	.0780435	0509	348 37 10.0	2.3	0.28	71558
9.0	.9757401	7338	.1720673	1052	.0746742	6821	349 6 66.3	58.5	0.23	72139
9.5	.9774678	4617	.1642902	3282	.0712993	3077	349 36 62.1	54.3	0.17	72725
10.0	.9791223	1165	.1565009	5391	.0679192	9281	350 6 57.3	49.4	0.11	73315
10.5	+.9807037	6981	—.1586998	7381	—.0645339	5433	350 36 52.1	44.2	+0.04	973908
11.0	.9822115	2062	.1408876	9261	.0611438	1537	351 6 46.4	38.4	—0.02	74503
11.5	.9836457	6406	.1330646	1032	.0577491	7595	351 36 40.2	32.1	0.09	75101
12.0	.9850062	0014	.1252316	2704	.0543500	3609	352 6 33.5	25.3	0.15	75703
12.5	.9862928	2882	.1173891	4280	.0509467	9580	352 36 26.4	18.2	0 22	76308
13.0	+.9875056	5013	—.1095377	5768	—.0475396	5514	353 6 18.8	10.5	—0.28	976916
13.5	.9886446	6405	.1016778	7170	.0441288	1410	353 36 10.8	2.5	0 35	77526
14.0	.9897097	7059	.0938102	8496	.0407147	7274	354 5 62.3	53 9	0.41	78139
14.5	.9907008	6972	.0859355	9750	.0372974	3105	354 35 53.3	44.9	0.47	78754
15.0	.9916178	6145	.0780539	0936	.0338771	8907	355 5 43.9	35.4	0.52	79372
15.5	+·9924607	4576	—.0701659	2057	—.0304541	4681	355 35 34.2	25.8	—0.56	979992
16.0	.9932293	2265	.0622723	3122	.0270287	0432	356 5 24.1	15.5	0.60	80615
16.5	.9939235	9210	.0543736	4136	.0236008	6157	356 35 13.5	4.8	0.63	81238
17.0	.9945433	5411	.0464706	5107	.0201710	1864	357 4 62.4	53.6	0.66	81863
17.5	.9950887	0868	.0385637	6039	.0167398	7556	357 34 50.9	42.1	0.68	82490
18.0	+.9955597	5582	—.0306538	6941	—.0133071	3234	358 4 38.9	30.0	—0.70	983117
18.5	.9959561	9549	.0227412	7816	.0098730	8897	358 34 26.5	17.6	0.70	83746
19.0	.9962779	2771	.0148264	8669	.0064380	4552	359 4 13.7	4.7	0.70	84376
19.5	.9965251	5246	—.0069108	9510	—.0030025	0201	359 33 60.4	51 4	0.68	85006
20.0	.9966977	6976	+.0010063	:9656	+.0004334	4153	0 3 46.6	37.5	0.66	85637
20.5	+.9967957	7959	+.0089231	8823	+.0038693	8508	0 33 32.4	23.3	—0.64	986268
21.0	.9968190	8196	.0168398	7989	.0073052	2862	1 3 17.7	8.5	0.62	86899
21.5	.9967674	7683	.0247556	7146	.0107408	7214	1 32 62.6	53 4	0.57	87529
22.0	.9966411	6425	.0326700	6289	.0141756	1557	2 2 47.1	37.8	0.53	88159
22.5	.9964401	4419	.0405821	5410	.0176096	5893	2 32 31.1	21.8	0.48	88788
23.0	+.9961645	1667	+.0484913	4501	+.0210425	0217	3 2 14.7	5.3	—0.43	989417
23.5	.9958143	8169	.0563972	3560	.0244739	4527	3 31 57.8	48.4	0.37	90045
24.0	.9953897	3928	.0642987	2574	.0279034	8817	4 1 40.4	30.9	0.31	90672
24.5	.9948907	8942	.0721958	1545	.0313308	3087	4 31 22.6	13.1	0.24	91298
25.0	.9943174	3214	.0800871	0457	.0347560	7334	5 0 64.2	54.6	0.18	91924
25.5	+.9936697	6741	+.0879723	9309	+.0381786	1556	5 30 45.2	35.6	—0.12	992549
26.0	.9929477	9526	.0958509	8094	.0415981	5747	6 0 25.6	15.9	0.06	93173
26.5	.9921514	1567	.1037224	6809	.0450145	:9907	6 29 65.6	55.9	—0.00	93796
27.0	.9912809	2867	.1115859	5443	.0484274	4031	6 59 45.0	35.1	+0.06	94417
27.5	.9903362	3424	.1194411	3995	.0518368	8121	7 29 24.0	14.1	0.12	95036
28.0	+.9893173	3240	+.1272873	2456	+.0552423	2171	7 58 62.3	52.3	+0.17	995655
28.5	.9882246	2317	.1351239	0822	.0586436	6180	8 28 40.1	30.1	0.22	96273
29.0	.9870585	0661	.1429502	9084	.0620404	0144	8 58 17.5	7.4	0.27	96890
29.5	.9858194	8275	.1507657	7239	.0654324	4060	9 27 54.2	44.1	0.31	97506
30.0	.9845073	5159	.1585695	5276	.0688192	7924	9 57 30.3	20.1	0.34	98121
30.5	+.9831220	1311	+.1663609	3190	+.0722006	1734	10 26 65.8	55.6	+0.36	998734
31.0	.9816634	6730	.1741396	0976	.0755765	5489	10 56 40.6	30.3	0.37	99346
31.5	.9801319	1419	.1819052	8632	.0789466	9186	11 26 14.9	4.5	0.38	99958
Apr. 1.0	.9785281	5386	.1896569	6148	.0823107	2823	11 55 48.6	38.1	0.39	☞00570
1.5	.9768519	8628	.1973940	3529	.0856687	6399	12 25 21.8	11.3	0.38	001182
2.0	+.9751041	1155	+.2051163	0741	+.0890200	:9908	12 54 54.4	43.8	+0.37	001794

☞ The first figures of this and the following logarithms are 0.0.

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
Apr. 2.5	+.9732845	2964	+.2128232	7810	+.0923647	3351	13 24 26.5	15.9	+0.34	002405
3.0	.9713933	4057	.2205141	4718	.0957024	6724	13 53 57.9	47.2	0.32	03017
3.5	.9694306	4435	.2281884	1461	.0990329	0025	14 23 28.8	18.1	0.28	03629
4.0	.9673966	4100	.2358456	8032	.1023559	3251	14 52 59.1	48.3	0.24	04242
4.5	.9652914	3053	.2434852	4428	.1056713	6401	15 22 28.8	18.0	0.19	04855
5.0	+.9631154	1298	+.2511067	0643	+.1089786	9469	15 51 57.9	47.0	0.14	005469
5.5	.9608686	8835	.2587095	6671	.1122778	2457	16 21 26.6	15.6	0.08	06083
6.0	.9585514	5669	.2662932	2507	.1155686	5360	16 50 54.6	43.5	+0.02	06696
6.5	.9561639	1800	.2738573	8148	.1188509	8179	17 20 22.2	11.1	—0.04	07310
7.0	.9537064	7230	.2814011	3585	.1221245	0911	17 49 49.2	38.0	0.10	07924
7.5	+.9511791	1962	+.2889242	8816	+.1253891	3553	18 19 15.7	4.5	—0.18	008539
8.0	.9485824	6001	.2964259	3832	.1286444	6102	18 48 41.6	30.3	0 25	09154
8.5	.9459163	9346	.3039059	8632	.1318903	8557	19 17 66.9	55.6	0.32	09771
9.0	.9431813	2001	.3113637	3209	.1351263	0913	19 47 31.8	20.4	0.38	10390
9.5	.9403774	1968	.3187987	7559	.1383524	3170	20 16 56.1	44.7	0.45	11009
10.0	+.9375049	5249	+.3262104	1676	+.1415688	5330	20 46 20.0	8.5	—0.51	011628
10.5	.9345637	5842	.3335985	5557	.1447750	7389	21 15 43.3	31.7	0.56	12247
11.0	.9315543	5754	.3409625	9196	.1479705	9340	21 44 66.2	54.5	0.61	12866
11.5	.9284769	4986	.3483015	2586	.1511553	1185	22 14 28.7	17.0	0.66	13486
12.0	.9253317	3539	.3556153	5723	.1543291	2919	22 43 50.7	38.9	0.70	14106
12.5	+.9221188	1415	+.3629036	8605	+.1574919	4544	23 13 12.3	0.5	—0.73	014726
13.0	.9188386	8619	.3701657	1226	.1606435	6056	23 42 33.4	21.5	0.76	15346
13.5	.9154911	5150	.3774012	3581	.1637835	7453	24 11 54.1	42.2	0.78	15966
14.0	.9120769	1013	.3846095	5663	.1669116	8730	24 41 14.4	2.4	0.79	16586
14.5	.9085960	6209	.3917902	7470	.1700278	:9889	25 10 34.4	22.4	0.81	17205
15.0	+.9050485	0740	+.3989422	8990	+.1731317	0924	25 39 53.9	41.8	—0 82	017822
15.5	.9014347	4608	.4060652	0220	.1762231	1835	26 9 12.9	0.7	0.80	18438
16.0	.8977546	7812	.4131587	1156	.1793019	2620	26 38 31.5	19.2	0.79	19052
16.5	.8940088	0359	.4202229	1799	.1823677	3275	27 7 49.7	37.4	0.76	19665
17.0	.8901977	2254	.4272567	2138	.1854203	3798	27 36 67.5	55.1	0.73	20276
17.5	+.8863215	3498	+ 4342595	2167	+.1854596	4188	28 6 24.9	12.5	—0.69	020885
18.0	.8823805	4093	.4412306	1879	.1914854	4443	29 35 41.8	29.3	0.65	21492
18.5	.8783751	4045	.4481698	1272	.1944972	4558	29 4 58.3	45.8	0.60	22097
19.0	.8743055	3355	.4550765	0341	.1974950	4533	29 34 14.4	1.8	0.55	22700
19.5	.8701716	2022	.4619504	9081	.2004784	4364	30 3 30.1	17.5	0.49	23300
20.0	+.8659740	:0052	+.4687907	7486	+.2034473	4050	30 32 45.4	32.7	—0.43	023896
20.5	.8617129	7447	.4755971	5551	.2064014	3588	31 1 60.3	47.5	0.36	24489
21.0	.8573884	4209	.4823690	3272	.2093407	2978	31 31 14.7	1 8	0.30	25079
21.5	.8530008	0340	.4891059	0643	.2122647	2215	32 0 28.7	15.8	0.23	25666
22.0	.8485507	5845	.4958070	7656	.2151732	1297	32 29 42.3	29.3	0.17	26249
22.5	+.8440385	0729	+.5024720	4308	+.2180660	0223	32 58 55.4	42.4	—0.10	026829
23.0	.8394650	5001	.5091003	0593	.2209431	8991	33 27 68.1	55.0	−0.04	27405
23.5	.8348306	8664	.5156917	6509	.2238039	7597	33 57 20.5	7.4	+0.01	27978
24.0	.8301354	1718	.5222454	2049	.2266484	6039	34 26 32.2	19.0	0.06	28548
24.5	.8253795	4166	.5287609	7206	.2294763	4316	34 55 43.4	30.1	0.12	29114
25.0	+.8205635	6013	+.5352377	1977	+.2322875	2425	35 24 54.2	40.9	+0.18	029677
25.5	.8156876	7260	.5416755	6357	.2350817	0365	35 53 64.5	51.1	0.21	30236
26.0	.8107523	7914	.5480737	0341	.2378585	8130	36 23 14.4	0.9	0.24	30791
26.5	.8057581	7979	.5544320	3926	.2406180	5723	36 52 23.8	10.2	0.26	31341
27.0	.8007056	7460	.5607498	7106	.2433596	3136	37 21 32.7	19.0	0.27	31888
27.5	+.7955952	6362	+.5670265	:9875	+.2460835	0373	37 50 41.1	27.4	+0.28	032433
28.0	.7904274	4691	.5732617	2230	.2487896	7432	38 19 48.9	35.1	0.29	32974
28.5	.7852024	2448	.5794550	4165	.2514774	4308	38 48 56.2	42.4	0.30	33410
29.0	.7799207	9637	.5856059	5677	.2541469	1001	39 17 63.0	49.1	0.30	34042
29.5	.7745827	6263	.5917145	6765	.2567978	7508	39 46 69.3	55.4	0.25	34571
30.0	+.7691886	2329	+.5977804	7427	+.2594301	3829	40 16 15.1	1.1	+0 25	035099
30.5	.7637389	7839	.6038030	7655	.2620433	:9959	40 45 20.5	6.4	0.22	35623
May 1.0	.7582343	2799	.6097811	7440	.2646377	5901	41 14 25.4	11.2	0.18	36144
1.5	.7526753	7215	.6157147	6777	.2672127	1649	41 43 29.8	15.5	0.13	36662
2.0	.7470624	1093	.6216037	5670	.2697683	7203	42 12 33.7	19.3	0.08	37177
2.5	+.7413962	4438	+.6274479	4115	+.2723043	2562	42 41 37.1	22.6	+0.02	037691

SUN'S COÖRDINATES, 1857.

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
May 3.0	+.7356769	7251	+.6332468	2107	+.2748205	7782	43 10 40.0	25.4	—0.04	038202
3.5	.7299052	9940	.6389999	9641	.2773169	2685	43 39 42.4	27.8	0.10	38711
4.0	.7240812	1307	.6447070	6715	.2797934	7448	44 8 44.3	29.6	0.16	39218
4.5	.7182054	2556	.6503677	3325	.2822497	2010	44 37 45.7	31.0	0.23	39723
5.0	.7122784	3293	.6559815	9466	.2846856	6367	45 6 46.6	31.8	0.29	40227
5.5	+.7063008	3524	+.6615481	5135	+.2871010	0520	45 35 47.1	32.2	—0.36	040729
6.0	.7002727	3250	.6670671	0328	.2894958	4466	46 4 47.1	32.1	0.42	41229
6.5	.6941948	2478	.6725381	5041	.2918698	8205	46 33 46.1	31.0	0.49	41728
7.0	.6880673	1211	.6779611	9274	.2942228	1734	47 2 45.8	30.6	0.56	42224
7.5	.6818907	9453	.6833356	3022	.2965548	5053	47 31 44.5	29.2	0.62	42718
8.0	+.6756654	7207	+.6886612	6281	+.2988655	8159	48 0 42.8	27.4	—0.67	043211
8.5	.6693919	4479	.6939375	9047	.3011551	1054	48 29 40.8	25.4	0.72	43702
9.0	.6630706	1274	.6991643	1318	.3034232	3734	48 58 38.3	22.8	0.76	44191
9.5	.6567018	7594	.7043413	3091	.3056698	6199	49 7 35.5	20.0	0.80	44678
10.0	.6502860	3443	.7094681	4363	.3078948	8448	49 56 32.3	16.7	0.83	45163
10.5	+.6438236	8826	+.7145445	5130	+.3100977	0476	50 25 28.8	13.1	—0.85	045645
11.0	.6373150	3748	.7195701	5390	.3122785	2283	50 54 24.9	9.1	0.86	46126
11.5	.6307608	8214	.7245445	5137	.3144372	3869	51 23 20.7	4.8	0 87	46605
12.0	.6241616	2229	.7294672	4368	.3165736	5232	51 52 16.2	0.2	0.88	47081
12.5	.6175178	5799	.7343380	3079	.3186875	6370	52 20 71.4	55.3	0.87	47555
13.0	+.6108296	8924	+.7391566	1269	+.3207787	7281	52 49 66.1	49.9	—0.87	048026
13.5	.6040976	1612	.7439227	8933	.3228471	7964	53 18 60.6	44.4	0.84	48495
14.0	.5973222	3866	.7486360	6070	.3248927	8419	53 47 54.9	38.6	0.81	48961
14.5	.5905036	5688	.7532962	2675	.3269153	8645	54 16 48.9	32.6	0.78	49424
15.0	.5836424	7084	.7579028	8745	.3289147	8638	54 45 42.6	26.2	0.74	49884
15.5	+.5767391	8058	+.7624554	4274	+.3308907	8398	55 14 36.0	19.5	—0.69	050342
16.0	.5697944	8619	.7669536	9260	.3328432	7922	55 43 29.1	12.5	0.63	50795
16.5	.5628086	8769	.7713972	3699	.3347720	7210	56 12 22.0	5.3	0.57	51244
17.0	.5557824	8514	.7757860	7591	.3366770	6259	56 40 74.6	57.8	0.51	51689
17.5	.5487161	7859	.7801193	0927	.3385579	5068	57 9 66.8	49.9	0.45	52129
18.0	+.5416104	6809	+.7843968	3706	+.3404146	3635	57 38 58.8	41.8	—0.39	052565
18.5	.5344655	5368	.7886185	5926	.3422470	1959	58 7 50.5	33.4	0.32	52996
19.0	.5272821	3541	.7927840	7585	.3440550	0039	58 36 42.0	24.8	0.25	53423
19.5	.5200608	1335	.7968931	8679	.3458385	7874	59 5 33.2	16.0	0.19	53844
20.0	.5128020	8755	.8009453	9205	.3475974	5463	59 34 24.1	6.8	0.13	54261
20.5	+.5055062	5804	+.8049401	9157	+.3493314	2803	60 2 74.7	57.3	—0.07	054672
21.0	.4981739	2488	.8088775	8535	.3510404	:9894	60 31 65.0	47.5	—0.02	55078
21.5	.4908059	8815	.8127569	7333	.3527244	6734	61 0 55.1	37.5	+0.04	55479
22.0	.4834026	4789	.8165781	5550	.3543831	3322	61 29 44.9	27.2	0.09	55874
22.5	.4759645	:0415	.8203410	3183	.3560163	:9654	61 58 34.3	16.5	0.13	56264
23.0	+.4684924	5701	+.8240453	0231	+.3576240	6732	62 27 23.5	5.6	+0.17	056648
23.5	.4609869	:0653	.8276907	6689	.3592062	1555	62 55 72.3	54.4	0.20	57027
24.0	.4534485	5276	.8312769	2556	.3607628	7122	63 24 60.9	42.9	0.22	57400
24.5	.4458775	9572	.8348036	7828	.3622934	2429	63 53 49.3	31.3	0.24	57768
25.0	.4382748	3552	.8382706	2503	.3637980	7476	64 22 37.2	19.1	0.25	58130
25.5	+.4306406	7217	+.8416777	6579	+.3652764	2262	64 51 24.8	6.6	+0.25	058486
26.0	.4229760	:0578	.8450247	0054	.3667286	6784	65 19 72.2	53.9	0.25	58837
26.5	.4152814	3639	.8483112	2924	.3681547	1046	65 48 59.3	40.9	0.23	59182
27.0	.4075575	6407	.8515371	5188	.3695546	5047	66 17 46.0	37.5	0.21	59522
27.5	.3998048	8887	.8547022	6844	.3709280	8782	66 46 32.4	13.8	0.18	59856
28.0	+.3920241	1087	+.8578062	7890	+.3722749	2253	67 14 78.3	59.6	+0.14	060186
28.5	.3842159	3012	.8608491	8324	.3735951	5456	67 43 64.0	45.3	0.10	60510
29.0	.3763807	4667	.8638306	8145	.3748889	8396	68 12 49.3	30.5	+0.06	60829
29.5	.3685190	6057	.8667507	7351	.3761558	1066	68 41 34.4	15.6	0.00	61143
30.0	.3606314	7188	.8696090	5940	.3773959	3469	69 10 19.0	0.1	—0.05	61451
30.5	+.3527188	8068	+.8724054	3909	+.3786097	5603	69 38 63.4	44.4	—0.11	061755
31.0	.3447816	8703	.8751399	1260	.3797956	7469	70 7 47.3	28.2	0.17	62055
31.5	.3368203	9097	.8778123	7990	.3809549	9063	70 36 30.9	11.7	0.24	62350
June 1.0	.3288356	9256	.8804224	4097	.3820873	0389	71 4 74.2	55.0	0.31	62641
1.5	.3208280	9186	.8829701	9580	.3831926	1444	71 33 57.3	37.9	0.38	62929
2.0	+.3127981	8894	+.8854554	4439	+.3842708	2228	72 2 40.1	20.6	—0.44	063213

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
June 2.5	+.3047466	8386	+.8878781	8672	+.3853218	2740	72 31 22.5	2.9	—0.51	063492
3.0	.2966739	7665	.8902381	2278	.3863457	2981	72 59 64.7	45.0	0.57	63769
3.5	.2885807	6739	.8925353	5256	.3873423	2949	73 28 46.6	26.9	0.63	64044
4.0	.2804673	5611	.8947695	7605	.3883116	2644	73 57 28.2	8.4	0.68	64314
4.5	.2723344	4288	.8969407	9323	.3892536	2066	74 25 69.5	49.7	0.74	64580
5.0	+.2641824	2775	+.8990487	0411	+.3901682	1214	74 54 50.6	30.6	—0.79	064844
5.5	.2560120	1078	.9010934	0864	.3910553	0087	75 23 31.5	11.4	0.82	65103
6.0	.2478236	9200	.9030746	0684	.3919148	8684	75 51 72.1	51.9	0.85	65359
6.5	.2396177	7147	.9049921	9866	.3927468	7006	76 20 52.6	32.3	0.87	65613
7.0	.2313949	4926	.9068459	8411	.3935512	5052	76 49 32.8	12.4	0.89	65864
7.5	+.2231560	2543	+.9086360	6319	+.3943280	2822	77 17 72.9	52.4	—0.90	066110
8.0	.2149014	:0003	.9103624	3590	.3950770	0314	77 46 52.7	32.1	0.91	66354
8.5	.2066317	7312	.9120250	0223	.3957985	7531	78 15 32.4	11.7	0.90	66595
9.0	.1983473	4474	.9136234	6214	.3964923	4472	78 43 72.0	51.2	0.90	66832
9.5	.1900487	1494	.9151575	1561	.3971581	1132	79 12 51.3	30.4	0.87	67067
10.0	+.1817362	8376	+.9166273	6267	+.3977961	7515	79 41 30.6	9.6	—0.85	067297
10.5	.1734107	5128	.9180326	0327	.3984063	3619	79 9 69.7	48.6	0.82	67522
11.0	.1650726	1753	.9193734	3743	.3989886	9445	80 38 48.8	27.6	0.78	67744
11.5	.1567227	8260	.9206497	6513	.3995426	4987	81 7 27.7	6.4	0.74	67963
12.0	.1483615	4655	.9218614	8638	.4000686	0250	81 35 66.6	45.2	0.69	68178
12.5	+.1399897	:0944	+.9230080	0111	+.4005666	5232	82 4 45.3	23.8	—0.63	068388
13.0	.1316077	7130	.9240896	0935	.4010364	:9933	82 33 23.9	2.3	0.57	68594
13.5	.1232160	3219	.9251062	1108	.4014779	4351	82 1 62.4	40.7	0.50	68796
14.0	.1148152	9218	.9260577	0631	.4018911	8486	83 30 40.9	19.1	0.44	68993
14.5	.1064059	5131	.9269439	9501	.4022763	2341	83 58 79.3	57.4	0.37	69185
15.0	+.0979886	:0964	+.9277647	7717	+.4026329	5911	84 27 57.7	35.7	—0.31	069373
15.5	.0895640	6724	.9285201	5279	.4029611	9196	84 56 35.9	13.8	0.24	69556
16.0	.0811326	2416	.9292099	2185	.4032605	2194	85 24 74.1	51.9	0.17	69732
16.5	.0726950	8046	.9298340	8434	.4035316	4908	85 53 52.2	29.9	0.11	69900
17.0	.0642520	3622	.9303923	4025	.4037744	7340	86 22 30.3	7.9	—0.05	70065
17.5	+.0558040	9148	+.9308848	8958	+.4039885	9484	86 50 68.4	45.9	+0.01	070224
18.0	.0473517	4631	.9313116	3234	.4041740	1343	87 19 46.4	23.8	0.06	70377
18.5	.0388960	:0079	.9316727	6853	.4043308	2914	87 48 24.3	1.6	0.11	70524
19.0	.0304372	5497	.9319679	9813	.4044590	4200	88 16 62.2	39.4	0.15	70665
19.5	.0219760	:0890	.9321970	2112	.4045586	5200	88 45 40.0	17.1	0.18	70800
20.0	+.0135130	6265	+.9323600	3751	+.4046295	5913	89 13 77.7	54.7	+0.21	070929
20.5	+.0050490	1630	.9324569	4728	.4046717	6339	89 42 55.4	32.3	0.23	71051
21.0	—.0034154	3009	.9324878	5046	.4046852	6478	90 11 33.0	9.8	0.24	71166
21.5	.0118796	7646	.9324527	4703	.4046701	6331	90 39 70.4	47.1	0.25	71274
22.0	.0203431	2276	.9323515	3700	.4046262	5896	91 8 47.9	24.5	0.25	71376
22.5	—.0288052	6892	+.9321841	2035	+.4045535	5173	91 37 25.2	1.7	+0.24	071471
23.0	.0372652	1487	.9319508	9711	.4044522	4164	92 5 62.5	38.9	0.23	71559
23.5	.0457224	6055	.9316515	6727	.4043222	2868	92 34 39.7	16.1	0.20	71641
24.0	.0541763	0589	.9312864	3085	.4041636	1286	93 2 76.8	53.1	0.17	71716
24.5	.0626261	5023	.9308555	8785	.4039763	9417	93 31 53.7	29.9	0.13	71785
25.0	—.0710711	:9529	+.9303589	3828	+.4037605	7263	94 0 30.6	6.7	+0.09	071849
25.5	.0795107	3922	.9297966	8214	.4035162	4824	94 28 67.4	43.4	+0.04	71907
26.0	.0879446	8257	.9291685	1942	.4032433	2100	94 57 44.1	20.0	—0.01	71959
26.5	.0963717	2524	.9284747	5013	.4029418	9089	95 25 80.6	56.4	0.07	72004
27.0	.1047916	6720	.9277154	7430	.4026119	5795	95 54 57.0	32.7	0.13	72043
27.5	—.1132036	0837	+.9268904	9189	+.4022536	2216	96 23 33.3	8.9	—0.20	072076
28.0	.1216073	4870	.9260002	0297	.4018669	8354	96 51 69.5	45.0	0.27	72102
28.5	.1300022	:8816	.9250449	0753	.4014519	4208	97 20 45.6	21.0	0.33	72123
29.0	.1383875	2666	.9240246	0560	.4010088	:9782	97 48 81.6	56.9	0.39	72140
29.5	.1467624	6412	.9229393	9716	.4005375	5073	98 17 57.5	32.7	0.46	72152
30.0	—.1551268	0053	+.9217887	8220	+.4000380	0083	98 46 33.3	8.4	—0.52	072159
30.5	.1634797	3579	.9205734	6076	.3995104	4811	99 14 69.0	44.0	0.58	72161
July 1.0	.1718209	6989	.9192939	3291	.3989548	9260	99 43 44.6	19.5	0.63	72159
1.5	.1801499	0276	.9179499	9860	.3983713	3430	100 11 82.2	57.0	0.69	72152
2.0	.1884659	3435	.9165415	5786	.3977598	7320	100 40 55.8	30.5	0.74	72141
2.5	—.1967683	6456	+.9150688	1068	+.3971204	0931	101 9 31.3	5.9	—0.78	072126

SUN'S COÖRDINATES, 1857.

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
July 3.0	—.2050567	:9337	+.9135320	5710	+.3964533	4275	101 37 66.8	41.3	—0.81	072107
3.5	.2133303	2071	.9119312	9712	.3957585	7322	102 6 42.2	16.7	0.84	72084
4.0	.2215888	4654	.9102666	3076	.3950360	0102	102 34 77.5	51.9	0.86	72057
4.5	.2298314	7078	.9085384	5804	.3942858	2605	103 3 52.9	27.2	0.87	72026
5.0	.2380577	:9339	.9067465	7895	.3935081	4833	103 32 28.2	2.4	0.87	71992
5.5	—.2462672	1432	+.9048910	9850	+.3927029	6786	104 0 63.6	37.7	—0.87	071954
6.0	.2544595	3353	.9029721	:0172	.3918702	8464	104 29 38.9	12.9	0.87	71911
6.5	.2626340	5096	.9009900	:0361	.3910101	:9868	104 57 74.3	48.2	0.85	71865
7.0	.2707904	6658	.8989448	9920	.3901227	0999	105 26 49.7	23.5	0.83	71815
7.5	.2789275	8027	.8968367	8849	.3892080	1857	105 54 85.2	58.9	0.79	71762
8.0	—.2870452	:9202	+.8946659	7152	+.3882661	2443	106 23 60.7	34.3	—0.76	071705
8.5	.2951430	0178	.8924324	4827	.3872970	2757	106 52 36.4	9.9	0.71	71644
9.0	.3032204	0950	.8901363	1877	.3863008	2801	107 20 72.1	45.5	0.67	71580
9.5	.3112767	1512	.8877778	8302	.3852775	2573	107 49 47.9	21.2	0.61	71512
10.0	.3193114	1857	.8853569	4104	.3842272	2075	108 17 83.7	56.9	0.55	71441
10.5	—.3273240	1982	+.8828738	9283	+.3831500	1308	108 46 59.7	32.8	—0.48	071365
11.0	.3353140	1880	.8803288	3844	.3820459	0272	109 15 35.9	8.9	0.42	71286
11.5	.3432808	1547	.8777219	7785	.3809149	8967	109 43 72.2	45.1	0.36	71202
12.0	.3512239	0977	.8750532	1109	.3797571	7395	110 12 48.6	21.4	0.29	71114
12.5	.3591426	0163	.8723228	3815	.3785726	5555	110 40 85.2	57.9	0.21	71022
13.0	—.3670364	:9100	+.8695308	5906	+.3773613	3448	111 9 61.9	34.5	—0.14	070924
13.5	.3749046	7781	.8666774	7383	.3761234	1074	111 38 38.8	11.4	0.08	70821
14.0	.3827467	6201	.8637629	8249	.3748589	8435	112 6 75.9	48.4	—0.03	70712
14.5	.3905622	4355	.8607873	8503	.3735679	5531	112 35 53.2	25.6	+0.03	70598
15.0	.3983507	2240	.8577508	8149	.3722505	2363	113 4 30.6	2.9	0.08	70479
15.5	—.4061115	:9848	+.8546536	7187	+.3709067	8931	113 32 68.2	40.4	+0.14	070355
16.0	.4138442	7175	.8514959	5621	.3695366	5236	114 1 45.9	18.0	0.19	70226
16.5	.4215479	4212	.8482781	3454	.3681404	1280	114 29 83.9	55.9	0.23	70091
17.0	.4292221	0954	.8450002	0686	.3667181	7063	114 58 62.0	33.9	0.26	69951
17.5	.4368661	7394	.8416622	7317	.3652697	2585	115 27 40.4	12.2	0.28	69804
18.0	—.4444795	3528	+.8382646	3552	+.3637953	7847	115 55 78.9	50.6	+0.29	069652
18.5	.4520616	:9349	.8348076	8793	.3622950	2850	116 24 57.6	29.3	0.30	69494
19.0	.4596118	4851	.8312914	3642	.3607690	7598	116 53 36.5	8.1	0.31	69329
19.5	.4671294	0028	.8277160	7899	.3592174	2087	117 21 75.4	46.9	0.30	69157
20.0	.4746140	4874	.8240821	1571	.3576403	6323	117 50 54.5	25.9	0.29	68980
20.5	—.4820649	:9484	+.8203899	4660	+.3560379	0305	118 19 33.8	5.1	+0.26	068795
21.0	.4894819	3556	.8166394	7166	.3544101	4034	118 47 73.3	44.5	0.24	68605
21.5	.4968642	7381	.8128306	9089	.3527571	7510	119 16 52.9	24.0	0.20	68408
22.0	.5042112	0853	.8089641	:0435	.3510790	0736	119 45 32.7	3.7	0.17	68205
22.5	.5115224	3967	.8050404	1208	.3493758	3710	120 13 72.7	43.7	0.12	67995
23.0	—.5187973	6719	+ 8010595	1410	+.3476479	6438	120 42 52.9	23.8	+0.07	067780
23.5	.5260350	:9099	.7970220	1045	.3458953	8918	121 11 33.1	4.0	—0.00	67558
24.0	.5332354	1106	.7929280	:0116	.3441182	1153	121 39 73.5	44.3	0.06	67330
24.5	.5403976	2732	.7887780	8627	.3423167	3144	122 8 54.0	24.7	0.12	67096
25.0	.5475212	3972	.7845720	6578	.3404911	4895	122 37 34.7	5.3	0.17	66856
25.5	—.5546057	4821	+.7803106	3975	+.3386414	6404	123 5 75.4	45.9	—0.24	066610
26.0	.5616505	5274	.7759940	:0819	.3367677	7674	123 34 56.3	26.7	0.30	66358
26.5	.5686553	5326	.7716226	7115	.3348701	8704	124 3 37.3	7.6	0.37	66101
27.0	.5756195	4973	.7671967	2867	.3329490	9500	124 31 78.4	48.6	0.43	65838
27.5	.5825426	4209	.7627165	8075	.3310044	0060	125 0 59.6	29.7	0.49	65569
28.0	—.5894241	3029	+.7581826	2747	+.3290365	0388	125 29 41.0	11.0	—0.54	065296
28.5	.5962635	1428	.7535952	6883	.3270454	0484	125 57 82.6	52.6	0.60	65018
29.0	.6030603	:9401	.7489548	:0490	.3250314	0351	126 26 64.3	34.2	0.65	64735
29.5	.6098142	6945	.7442617	3568	.3229946	9990	126 55 46.1	15.9	0.68	64447
30.0	.6165247	4056	.7395163	6126	.3209350	9401	127 23 88.0	57.7	0.71	64155
30.5	—.6231914	0728	+.7347188	8161	+.3188529	8586	127 52 70.1	39.7	—0.74	063860
31.0	.6298138	6958	.7298696	9680	.3167484	7548	128 21 52.4	21.9	0.77	63561
31.5	.6363915	2740	.7249690	:0684	.3146216	6286	128 50 34.9	4.3	0.79	63259
Aug. 1.0	.6429240	8071	.7200176	1181	.3124727	4804	129 18 77.5	46.8	0.80	62953
1.5	.6494108	2944	.7150156	1171	.3103019	3102	129 47 60.3	29.6	0.79	62644
2.0	—.6558516	7358	+.7099633	:0659	+.3081093	1183	130 16 43.3	12.5	—0.79	062330

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X′.	Y.	Y′.	Z.	Z′.	λ = ☉'s True Longitude.	λ′	β = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
Aug. 2.5	—.6622459	1307	+.7048609	9645	+.3058950	9046	130 44 86.4	55.6	—0.78	062013
3.0	.6685934	4788	.6997090	8135	.3036592	6695	131 13 69.8	38.9	0.76	61693
3.5	.6748938	7798	.6945074	6131	.3014021	4131	131 42 53.4	22.4	0.73	61369
4.0	.6811464	0330	.6892569	3636	.2991238	1355	132 11 37.3	6.2	0.70	61043
4.5	.6873510	2382	.6839582	:0659	.2968244	1368	132 39 81.4	50.2	0.65	60713
5.0	—.6935070	3949	+.6786111	7198	+.2945041	5172	133 8 65.8	34.5	—0.60	060381
5.5	.6996141	5027	.6732161	3258	2921630	1767	133 37 50.4	19.0	0.54	60047
6.0	.7056718	5611	.6677736	8843	.2898013	8157	134 6 35.3	3.8	0.49	59710
6.5	.7116797	5697	.6622840	3957	.2874191	4341	134 34 80.5	49.0	0.43	59370
7.0	.7176374	5281	.6567475	8602	.2850167	0324	135 3 66.0	34.4	0.37	59026
7.5	—.7235446	4380	+.6511643	2780	+.2825941	6104	135 32 51.9	20.3	—0.30	058679
8.0	.7294009	2931	.6455349	6496	.2801516	1686	136 1 38.0	6.3	0.23	58330
8.5	.7352057	0986	.6398597	9753	.2776892	7068	136 29 84.4	52.6	0.16	57978
9.0	.7409588	8525	.6341392	2558	.2752070	2253	136 58 71.3	39.4	0.10	57623
9.5	.7466596	5541	.6283736	4911	.2727052	7241	137 27 58.4	26.4	—0.03	57265
10.0	—.7523077	2030	+.6225633	6818	+.2701840	2036	137 56 45.9	13.8	+0.04	056903
10.5	.7579025	7986	.6167086	8280	.2676435	6637	138 25 33.7	1.6	0.10	56538
11.0	.7634438	3407	.6108098	9302	.2650838	1047	138 53 81.9	49.7	0.15	56170
11.5	.7689311	8288	.6048672	9885	.2625051	5267	139 22 70.5	38.3	0.21	55798
12.0	.7743641	2626	.5988813	:0036	.2599076	9299	139 51 59.5	27.2	0.26	55421
12.5	—.7797421	6414	+.5928525	9757	+.2572915	3145	140 20 48.8	16.5	+0.30	055040
13.0	.7850648	:9649	.5867812	9053	.2546569	6806	140 49 38.6	6.2	0.33	54655
13.5	.7903317	2326	.5806677	7927	.2520039	0283	141 17 88.7	56.2	0.35	54265
14.0	.7955424	4442	.5745127	6386	.2493328	3579	141 46 79.3	46.7	0.37	53872
14.5	.8006965	5991	.5683164	4432	.2476437	6495	142 15 70.2	37.5	0.39	53474
15.0	—.8057936	6971	+.5620792	2069	+.2439368	9633	142 44 61.5	28.7	+0.40	053072
15.5	.8108334	7377	.5558013	9299	.2412123	2395	143 13 53.2	20.4	0.40	52664
16.0	.8158154	7206	.5494835	6130	.2384704	4983	143 42 45.3	12.4	0.40	52252
16.5	.8207390	6451	.5431259	2563	.2357113	7399	144 11 37.8	4.9	0.37	51834
17.0	.8256039	5109	.5367293	8606	.2329352	9645	144 39 90.7	57.7	0.35	51412
17.5	—.8304096	3175	+.5302939	4261	+.2301422	1722	145 9 84.0	51.0	+0.32	050984
18.0	.8351558	0650	.5238205	9536	.2273326	3633	145 37 77.8	44.7	0.28	50552
18.5	.8398421	7518	.5173094	3433	.2245066	5380	146 6 71.8	38.6	0.23	50114
19.0	.8444681	3787	.5107611	8959	.2216645	6966	146 35 66.2	32.9	0.19	49672
19.5	.8490334	:9449	.5041759	3117	.2188064	0392	147 4 60.9	27.5	0.13	49224
20.0	—.8535377	4501	+.4975545	6909	+.2159325	9660	147 33 56.1	22.6	+0.08	048771
20.5	.8579805	8938	.4908974	:0346	.2130430	0772	148 2 51.6	18.1	+0.02	48313
21.0	.8623615	2758	.4842052	3432	.2101384	1733	148 31 47.5	13.9	—0.04	47850
21.5	.8666803	5955	.4774781	6169	.2072186	2542	149 0 43.6	10.0	0.11	47382
22.0	.8709366	8528	.4707168	8564	.2042840	3203	149 29 40.2	6.5	0.18	46904
22.5	—.8751301	0473	+.4639218	:0621	+.2013347	3716	149 58 36.9	3.2	-0.25	046431
23.0	.8792606	1788	.4570937	2348	.1983710	4086	150 27 34.1	0.3	0.31	45948
23.5	.8833277	2469	.4502327	3745	.1953932	4314	150 55 91.6	57.7	0.37	45460
24.0	.8873312	2515	.4433396	4821	.1924013	4402	151 24 89.5	55.5	0.42	44969
24.5	.8912707	1921	.4364149	5581	.1893957	4352	151 53 87.6	53.5	0.48	44474
25.0	—.8951460	0685	+.4294591	6030	+.1863768	4170	152 22 86.2	52.0	—0.53	043975
25.5	.8989567	8803	.4224727	5173	.1833445	3853	152 51 85.0	50.8	0.57	43472
26.0	.9027026	6273	.4154561	6014	.1802993	3407	153 20 84.2	49.9	0.60	42965
26.5	.9063833	3091	.4084100	5560	.1772412	2832	153 49 83.7	49.4	0.63	42455
27.0	.9099986	9256	.4013347	4814	.1741705	2131	154 18 83.6	49.2	0.65	41940
27.5	—.9135482	4763	+.3942310	3783	+.1710876	1305	154 47 83.7	49.3	—0.67	041423
28.0	.9170320	:9613	.3870993	2473	.1679927	:0365	155 16 84.2	49.7	0.68	40903
28.5	.9204497	3801	.3799403	:0889	.1648858	9302	155 45 85.0	50.4	0.69	40380
29.0	.9238012	7328	.3727544	9037	.1617671	8122	156 14 86.1	51.4	0.70	39854
29.5	.9270863	0190	.3655418	6917	.1586369	6826	156 43 87.5	52.8	0.68	39326
30.0	—.9303048	2387	+.3583031	4536	+.1554956	5420	157 12 89.4	54.6	—0.66	038796
30.5	.9334563	3914	.3510391	1902	.1523432	3902	157 41 91.6	56.8	0.63	38263
31.0	.9365406	4769	.3437503	9018	.1491800	2276	158 10 94.2	59.3	0.60	37729
31.5	.9395576	4951	.3364372	5895	.1460064	0546	159 40 37.2	2.3	0.55	37193
Sep. 1.0	.9425073	4460	.3290999	2528	.1428224	8712	159 9 40.6	5.6	0.51	36656
1.5	—.9453891	3290	+.3217387	8921	+.1396283	6777	159 38 44.3	9.3	—0.45	036117

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.	λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							° ′ ″	″	″	0.0
Sept. 2.0	—.9482031	1442	+.3143552	5092	+.1364242	4742	160 7 48.3	13.2	—0.40	035577
2.5	.9509489	8912	.3069489	:1032	.1332104	2610	160 36 52.7	17.5	0.33	35037
3.0	.9536264	5700	.2995211	6762	.1299870	:0383	161 5 57.6	22.3	0.27	34495
3.5	.9562354	1803	.2920720	2276	.1267544	8063	161 34 62.9	27.6	0.20	33952
4.0	.9587757	7219	.2846014	7575	.1235127	5653	162 3 68.7	33.3	0.14	33408
4.5	—.9612472	1947	+.2771102	2668	+.1202621	3153	162 32 74.9	39.5	—0.06	032862
5.0	.9636497	5986	.2695989	7560	.1170027	0565	163 1 81.6	46.1	+0.01	32316
5.5	.9659828	9331	.2620682	2258	.1137347	7891	163 30 88.9	53.4	0.08	31768
6.0	.9682462	1979	.2545183	6764	.1104586	5136	164 0 36.5	0.9	0.14	31219
6.5	.9704399	3930	.2469500	:1085	.1071744	2300	164 29 44.8	9.2	0.21	30670
7.0	—.9725639	5184	+.2393636	5226	+.1038824	9386	164 58 53.5	17.8	+0.27	030119
7.5	.9746178	5737	.2317597	9191	.1005826	6394	165 27 62.6	26.9	0.33	29567
8.0	.9766013	5586	.2241389	2988	.0972755	3329	165 56 72.3	36.5	0.38	29015
8.5	.9785141	4728	.2165013	6616	.0939612	:0192	166 25 82.4	46.6	0.42	28458
9.0	.9803562	3163	.2088479	:0091	.0906400	6986	166 54 93.1	57.2	0.45	27901
9.5	—.9821274	0889	+.2011792	3403	+.0873120	3712	167 24 44.3	8.4	+0 47	027342
10.0	.9838275	7905	.1934957	6572	.0839775	:0373	167 53 56.1	20.1	0.49	26781
10.5	.9854563	4207	.1857978	9593	.0806367	6971	168 22 68.3	32.3	0.51	26219
11.0	.9870137	:9796	.1780859	2482	.0772899	3509	168 51 81.2	45.1	0.52	25655
11.5	.9884995	4668	.1703605	5231	.0739372	9987	169 20 94.6	58.5	0.53	25089
12.0	—.9899135	8823	+.1626224	7854	+.0705790	6411	169 50 48.6	12.4	+0.53	024520
12.5	.9912553	2256	.1548722	:0355	.0672155	2781	170 19 63.0	26.7	0.51	23950
13.0	.9925249	4967	.1471103	2740	.0638469	9101	170 48 78.1	41.7	0 49	23377
13.5	.9937221	6954	.1393372	5012	.0604734	5371	171 17 93.7	57.3	0.45	22802
14.0	.9948467	8215	.1315537	7180	.0570954	1597	171 47 49.7	13.2	0.42	22223
14.5	—.9958986	8749	+.1237603	9249	+.0537131	7779	172 16 66.2	29.7	+0.38	021642
15.0	.9968777	8555	.1159579	:1228	.0503266	3920	172 45 83.4	46.8	0.34	21058
15.5	.9977840	7633	.1081469	3121	.0469362	:0021	173 15 41.0	4.3	0.28	20471
16.0	.9986168	5976	.1003277	4932	.0435423	6087	173 44 59.3	22.6	0.23	19880
16.5	.9993764	3587	.0925006	6663	.0401451	2120	174 13 78.0	41.3	0.17	19286
17.0	-1.0000627	0465	+.0846668	8328	+.0367450	8124	174 43 37.4	0.6	+0.11	018690
17.5	1.0006757	6611	.0768268	9930	.0333421	4100	175 12 57.0	20.2	+0.04	18090
18.0	1.0012152	2022	.0689811	:1476	.0299368	:0052	175 41 77.3	40.4	—0.02	17488
18.5	1.0016811	6697	.0611302	2969	.0265292	5980	176 11 37.9	1.0	0.09	16883
19.0	1.0020734	0636	.0532749	4419	.0231198	1891	176 40 59.2	22.2	0.15	16276
19.5	-1.0023919	3837	+.0454157	5829	+.0197087	7784	177 9 80.9	43.9	—0.21	015665
20.0	1.0026366	6300	.0375533	7207	.0162962	3664	177 39 43.0	5.9	0.27	15052
20.5	1.0028075	8025	.0296882	8557	.0128825	9531	178 8 65.5	28.4	0.32	14436
21.0	1.0029046	9012	.0218211	9888	.0094680	5391	178 37 88.6	51.4	0.37	13817
21.5	1.0029280	9263	.0139528	:1206	.0060530	1245	179 8 52.1	14.9	0.42	13196
22.0	-1.0028776	8776	+.0060886	2516	+.0026377	7097	179 36 76.1	38.8	—0.46	012574
22.5	1.0027533	7549	—.0017859	6179	—.0007778	7054	180 6 40.5	3.2	0.49	11950
23.0	1.0025552	5588	.0096548	4868	.0041930	1201	180 35 65.4	28.0	0.51	11323
23.5	1.0022834	2880	.0175226	3546	.0076077	5344	181 4 90.7	53.3	0.53	10695
24.0	1.0019377	9439	.0253888	2208	.0110217	:9490	181 34 56.5	19.0	0.54	10065
24.5	-1.0015183	5261	—.0332529	0849	—.0144347	3605	182 3 82.7	45.2	—0.55	009433
25.0	1.0010253	0347	.0411144	:9464	.0178465	7720	182 33 49.3	11.7	0.56	08800
25.5	1.0004586	4696	.0489725	8045	.0212565	1814	183 2 76.2	38.6	0.54	08166
26.0	.9998182	8308	.0568264	6584	.0246647	5891	183 32 43.6	5.9	0.53	07531
26.5	.9991042	1184	.0646757	5077	.0280710	:9950	184 1 71.5	33.8	0.50	06895
27.0	—.9983168	3326	—.0725199	3519	—.0314752	3968	184 31 39.9	2.1	—0.47	006259
27.5	.9974561	4735	.0803586	1906	.0348771	8003	185 0 68.6	30.7	0.43	05623
28.0	.9965222	5412	.0881910	0231	.0382761	1989	185 29 97.8	59.8	0.39	04987
28.5	.9955151	5357	.0960167	:8489	.0416719	5944	185 59 67.4	29.4	0.33	04351
29.0	.9944350	4572	.1038350	6673	.0450644	:9865	186 28 97.5	59.4	0.27	03716
29.5	—.9932818	3056	—.1116454	4778	—.0484535	3753	186 58 68.1	30.0	—0.21	003082
30.0	.9920555	0808	.1194470	2796	.0518391	7605	187 28 39.2	1.0	0.15	02448
30.5	.9907558	7828	.1272396	0724	.0552208	1422	187 57 70.6	32.4	0.09	01815
Oct. 1.0	.9893836	4122	.1350228	:8558	.0585984	5191	188 27 42.5	4.2	—0.03	01184
1.5	.9879387	9689	.1427963	6293	.0619718	8922	188 56 74.8	36.5	+0.05	00553
2.0	—.9864211	4529	—.1505590	:3925	—.0653405	9505	189 26 47.7	9.3	+0.12	▣99923

▣ The first figures of [illegible] are 9.9

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							°	'	"	"	"	9.9
Oct. 2.5	—.9848310	8644	—.1583105	1442	—.06 7042	6239	189	55	81.2	42.7	+0.19	999294
3.0	.9831685	2035	.1660503	:8843	.07 0632	:9826	190	25	55.2	16.6	0.25	98667
3.5	.9814335	4701	.1737781	6123	.0754165	3356	190	54	89.6	51.0	0.31	98042
4.0	.9796260	6642	.1814934	3279	.0787645	6833	191	24	64.6	5.9	0.37	97418
4.5	.9777464	7862	.1891951	0298	.0821066	0251	191	54	40.1	1.4	0.43	96795
5.0	—.9757951	8365	—.1968830	7180	—.0854425	3607	192	23	76.2	37.4	+0.48	996174
5.5	.9737715	8145	.2045566	3918	.0887723	6902	192	53	52.8	14.0	0.53	95555
6.0	.9716759	7206	.2122151	0506	.0920958	0134	193	22	90.0	50.1	0.57	94937
6.5	.9695083	5545	.2198580	6937	.0954128	3301	193	52	67.7	28.8	0.60	94320
7.0	.9672688	3166	.2274849	3209	.0987228	6398	194	22	46.0	7.0	0.63	93704
7.5	—.9649576	:0070	—.2350955	:9308	—.1020254	:9422	194	51	84.9	45.8	+0.65	993189
8.0	.9625748	6258	.2426890	5256	.1053205	2370	195	21	64.3	25.1	0.66	92475
8.5	.9601207	1733	.2502647	1016	.1086085	5244	195	51	44.3	5.1	0.67	91864
9.0	.9575953	6495	.2578220	6593	.1118881	8041	196	20	84.9	45.6	0.67	91254
9.5	.9549985	:0543	.2653603	1979	.1151600	0752	196	50	66.0	26.7	0.65	90643
10.0	—.9523305	3879	—.2728792	7172	—.1184234	3389	197	20	47.7	8.3	+0.64	990034
10.5	.9495915	6505	.2803784	2168	.1216780	5933	197	49	90.0	50.6	0.61	89425
11.0	.9467815	8421	.2878571	6959	.1249235	8385	198	19	72.9	33.4	0.58	88817
11.5	.9439007	9629	.2953151	1543	.1281599	0747	198	49	56.4	16.9	0.54	88209
12.0	.9409492	:0130	.3027508	5904	.1313873	3018	199	19	40.5	0.9	0.50	87601
12.5	—.9379273	9927	—.3101641	0041	—.1346054	5197	199	48	85.2	45.5	+0.45	986994
13.0	.9348352	9022	.3175546	3951	.1378126	7267	200	18	70.4	30.6	0.40	86387
13.5	.9316731	7417	.3249218	7628	.1410105	:9245	200	48	56.1	16.3	0.34	85781
14.0	.9284410	5112	.3322650	1065	.1441985	1123	201	18	42.5	2.6	0.28	85174
14.5	.9251390	2108	.3395835	4255	.1473760	2897	201	47	89.4	49.5	0.21	84567
15.0	—.9217676	8410	—.3468765	7190	—.1505392	4527	202	17	77.0	37.0	+0.14	983960
15.5	.9183264	4014	.3541434	:9864	.1536936	6070	202	47	65.0	25.0	0.08	83352
16.0	.9148161	8927	.3613838	2273	.1568364	7496	203	17	53.6	13.5	+0.02	82744
16.5	.9112370	3152	.3685974	4414	.1599670	8801	203	47	42.7	2.6	—0.04	82136
17.0	.9075894	6692	.3757833	6279	.1630856	:9985	204	16	92.3	52.1	0.09	81528
17.5	—.9038734	9548	—.3829408	7860	—.1661924	1052	204	46	82.4	42.1	—0.15	980919
18.0	.9000892	1722	.3900697	:9155	.1692862	1989	205	16	73.1	32.7	0.20	80310
18.5	.8962371	3217	.3971699	0161	.1723675	2801	205	46	64.3	23.9	0.25	79701
19.0	.8923176	4058	.4042381	0851	.1754356	3481	206	16	55.9	15.4	0.30	79091
19.5	.8883307	4185	.4112779	1255	.1784907	4032	206	46	48.0	7.5	0.33	78481
20.0	—.8842769	3663	—.4182844	1326	—.1815318	4442	207	15	100.5	59.9	—0.36	977872
20.5	.8801564	2474	.4252604	1092	.1845588	4712	207	45	93.6	53.0	0.38	77263
21.0	.8759695	:0621	.4322040	0534	.1875729	4852	208	15	87.1	46.4	0.39	76654
21.5	.8717166	8108	.4391146	:9646	.1905710	4833	208	39	80.9	40.2	0.40	76045
22.0	.8673980	4938	.4459919	8426	.1935567	4689	209	15	75.2	34.4	0.41	75437
22.5	—.8630141	1115	—.4528355	6868	—.1965269	4391	209	45	70.0	29.1	—0.40	974831
23.0	.8585655	6645	.4596446	4966	.1994820	3942	210	15	65.3	24.3	0.39	74225
23.5	.8540518	1524	.4664188	2715	.2024216	3338	210	45	61.0	19.9	0.35	73620
24.0	.8494741	5763	.4731574	0108	.2053456	2578	211	15	57.1	15.9	0.34	73016
24.5	.8448323	9361	.4798599	7140	.2082540	1662	211	45	53.5	12.3	0.29	72414
25.0	—.8401275	2329	—.4865259	3807	—.2111468	0590	212	15	50.3	9.0	—0.26	971813
25.5	.8353590	4660	.4931552	0107	.2140234	:9356	212	45	47.7	6.4	0.21	71215
26.0	.8305275	5361	.4997467	6030	.2168839	7961	213	15	45.5	4.1	0.17	70619
26.5	.8256338	7440	.5063002	1573	.2197274	6396	213	45	43.7	2.3	0.10	70025
27.0	.8206782	7900	.5128150	6729	.2225547	4670	214	15	42.2	0.7	−0.04	69433
27.5	—.8156611	7745	—.5192911	1498	—.2253651	2774	214	44	101.1	59.5	+0.03	968844
28.0	.8105829	6979	.5257278	5874	.2281582	0706	215	14	100.4	58.7	0.10	68260
28.5	.8054435	5601	.5321246	:9850	.2309338	8462	215	44	100.2	58.4	0.17	67678
29.0	.8002434	3616	.5384809	3422	.2336922	6047	216	14	100.4	58.5	0.23	67099
29.5	.7949833	:0031	.5447964	6585	.2364325	3450	216	44	101.0	59.1	0.30	66524
30.0	—.7896635	7849	—.5510708	:9338	—.2391554	0680	217	15	42.0	0.0	+0.37	965954
30.5	.7842842	4072	.5573034	1672	.2418601	7728	217	45	43.5	1.5	0.44	65385
31.0	.7788459	9705	.5634940	3587	.2445460	4588	218	15	45.4	3.3	0.50	64821
31.5	.7733490	4752	.5696425	5081	.2472141	1270	219	45	47.7	5.6	0.56	64261
Nov. 1.0	.7677938	9216	.5757477	6141	.2498632	7762	219	15	50.5	8.3	0.61	63705
1.5	—.7621809	3103	—.5818096	6769	—.2524939	4070	219	45	53.8	11.5	+0.66	63153

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							°	′	″	″	″	9.9
Nov. 2.0	—.7565102	6412	—.5878273	6955	—.2551051	0183	220	15	57.5	15.1	+0.70	962606
2.5	.7507822	9148	.5938006	6697	.2576974	6107	220	45	61.7	19.2	0.74	62063
3.0	.7449971	:1313	.5997292	5993	.2602702	1836	221	15	66.4	23.8	0.77	61524
3.5	.7391556	2914	.6056127	4837	.2628231	7366	221	45	71.6	29.0	0.79	60989
4.0	.7332585	3959	.6114503	3223	.2653562	2699	222	15	67.2	24.5	0.80	60457
4.5	—.7273060	4450	—.6172417	1247	—.2678694	7833	222	45	83.4	40.7	+0.81	959930
5.0	.7212982	4388	.6229864	8604	.2703626	2766	223	15	89.9	47.1	0.82	59406
5.5	.7152354	3776	.6286841	5591	.2728355	7496	223	45	97.1	54.3	0.80	58887
6.0	.7091182	2620	.6343343	2104	.2752877	2020	224	16	44.6	1.7	0.79	58371
6.5	.7029470	:0923	.6399366	8137	.2777190	6335	224	46	52.7	9.7	0.77	57860
7.0	—.6967222	8690	—.6454905	3687	—.2801297	0444	225	16	61.1	18.0	+0.75	957353
7.5	.6904440	5923	.6509956	8748	.2825187	4336	225	46	70.1	26.9	0.70	56850
8.0	.6841129	2627	.6564514	3317	.2848869	8020	226	16	79.7	36.4	0.66	56350
8.5	.6777292	8804	.6618575	7388	.2872329	1482	226	46	89.8	46.4	0.61	55854
9.0	.6712935	4462	.6672134	0958	.2895577	4732	227	16	100.4	56.9	0.57	55361
9.5	—.6648062	8603	—.6725186	4021	—.2918601	7758	227	47	51.5	8.0	+0.51	954870
10.0	.6582679	4235	.6777729	6575	.2941409	0560	228	17	63.1	19.5	0.45	54383
10.5	.6516791	8361	.6829757	8614	.2963988	3150	229	47	75.2	31.6	0.38	53900
11.0	.6450403	1988	.6881262	0130	.2986346	5511	229	17	87.8	44.1	0.32	53419
11.5	.6383517	5116	.6932241	1120	.3008472	7640	229	47	100.8	57.1	0.25	52942
12.0	—.6316139	7753	—.6982692	1583	—.3030372	:9543	230	18	54.3	10.5	+0.18	952467
12.5	.6248274	9902	.7032611	1514	.3052037	1211	230	48	68.3	24.4	0.12	51994
13.0	.6179926	:1569	.7081992	0907	.3073474	2651	231	9	92.7	48.7	0.07	51533
13.5	.6111101	2758	.7130830	:9757	.3094670	3850	231	48	97.6	53.5	+0.01	51056
14.0	.6041804	3476	.7179119	8058	.3115630	4814	232	19	53.0	8.8	—0.04	50591
14.5	—.5972042	3728	—.7226858	5809	—.3136350	5537	232	49	68.7	24.5	—0.10	950128
15.0	.5901818	3518	.7274040	3003	.3156828	6019	233	19	84.9	40.6	0.15	49667
15.5	.5831140	2854	.7320663	:9648	.3177062	6256	233	49	101.5	57.1	0.19	49207
16.0	.5760011	1739	.7366722	5710	.3197051	6249	234	20	58.5	14.0	0.22	48749
16.5	.5688438	:0180	.7412215	1216	.3216794	5996	234	50	75.8	31.2	0.24	48294
17.0	—.5616426	8182	—.7457135	6149	—.3236289	5495	235	20	93.5	48.8	—0.26	947842
17.5	.5543982	5752	.7501481	0508	.3255536	4746	235	51	51.5	6.7	0.27	47392
18.0	.5471112	2896	.7545247	4287	.3274530	3745	236	31	69.9	25.0	0.28	46945
18.5	.5397823	9620	.7588431	7484	.3293269	2488	236	51	88.6	43.6	0.27	46500
19.0	.5324120	5933	.7631033	0100	.3311756	0980	237	22	47.7	2.6	0.27	46058
19.5	—.5250007	1831	—.7673035	2115	—.3329984	9212	237	52	67.2	22.0	—0.25	945618
20.0	.5175490	7328	.7714445	3539	.3347953	7186	238	22	86.8	41.5	0.23	45182
20.5	.5100580	2431	.7755263	4370	.3365667	4904	238	53	46.7	1.4	0.19	44749
21.0	.5025280	7145	.7795481	4602	.3383119	2361	239	23	67.0	21.6	0.16	44320
21.5	.4949595	:1473	.7835097	4232	.3400308	:9555	239	55	87.4	41.9	0.11	43894
22.0	—.4873531	5423	—.7874109	3258	—.3417233	6485	240	24	48.3	2.7	—0.07	943472
22.5	.4797095	9000	.7912513	1676	.3433895	3152	240	54	69.5	23.8	—0.01	43053
23.0	.4720291	2290	.7950305	:9483	.3450294	:9556	241	24	90.9	45.1	+0.05	42639
23.5	.4643127	5059	.7987483	6675	.3466427	5694	241	55	52.6	6.7	0.12	42228
24.0	.4565610	7556	.8024043	3250	.3482288	1560	242	25	74.5	28.5	0.18	41822
24.5	—.4487745	9704	—.8059983	9204	—.3497883	7160	242	55	96.6	50.5	+0.25	941420
25.0	.4409538	:1510	.8095301	4537	.3513208	2490	243	26	59.0	12.8	0.31	41023
25.5	.4330997	2982	.8129993	9244	.3528260	7547	243	56	81.6	35.4	0.38	40631
26.0	.4252126	4124	.8164061	3327	.3543039	2331	244	26	104.5	58.2	0.44	40243
26.5	.4172930	4940	.8197499	6780	.3557546	6843	244	57	67.6	21.2	0.51	39861
27.0	—.4093416	5439	—.8230307	:9603	—.3571780	1082	245	27	91.0	44.5	+0.57	939484
27.5	.4013589	5624	.8262480	1791	.3585739	5046	245	58	54.7	8.1	0.63	39113
28.0	.3933456	5503	.8294016	3342	.3599422	8735	246	28	78.6	31.9	0.68	38748
28.5	.3853024	5083	.8324913	4254	.3612828	2146	246	58	102.8	56.0	0.73	38388
29.0	.3772297	4368	.8355170	4526	.3625957	5281	247	29	67.3	20.4	0.78	38034
29.5	—.3691283	3365	—.8384785	4156	—.3638808	8138	247	59	92.0	45.0	+0.82	938686
30.0	.3609986	:2080	.8413756	3138	.3651379	0714	248	30	56.9	9.8	0.85	37345
30.5	.3528412	:0517	.8442081	1483	.3663671	3011	249	0	82.1	35.0	0.87	37010
Dec. 1.0	.3446566	8683	.8469758	9176	.3675681	5027	249	31	47.6	0.4	0.88	36682
1.5	.3364454	6582	.8496778	6212	.3687409	6761	250	1	73.5	26.2	0.90	36360
2.0	—.3282081	4220	—.8523149	2599	—.3698852	8210	250	31	99.6	52.2	+0.91	936044

Date. 1857.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	λ = ☉'s True Longitude.			λ'	δ = ☉'s Latitude.	Log. Rad. Vect. = ρ
							°	′	″	″	″	9.9
Dec. 2.5	—.3199456	:1606	—.8548867	8333	—.3710012	:9876	251	2	66.0	18.5	+0.90	935735
3.0	.3116582	8743	.8573926	3410	.3720887	0258	251	32	92.7	45.1	0.89	35432
3.5	.3033472	5643	.8598327	7826	.3731475	0852	252	3	59.6	11.9	0.86	35135
4.0	.2950124	2306	.8622062	1578	.3741776	1160	252	33	86.8	39.0	0.84	34845
4.5	.2866547	8740	.8645133	4665	.3751790	1180	253	4	54.3	6.4	0.80	34560
5.0	—.2782746	4949	—.8667537	7087	—.3761515	0912	253	34	82.1	34.1	+0.77	934281
5.5	.2698728	:0941	.8689273	8840	.3770951	0354	254	5	50.2	2.1	0.71	34008
6.0	.2614498	6721	.8710340	:9924	.3780096	:9506	254	35	78.5	30.3	0.66	33741
6.5	.2530063	2295	.8730736	0337	.3788950	8367	255	5	107.2	58.9	0.60	33480
7.0	.2445427	7669	.8750457	0076	.3797513	6937	255	36	76.2	27.8	0.54	33224
7.5	—.2360599	2850	—.8669502	9139	—.3805780	5211	256	6	105.5	57.0	+0.48	932975
8.0	.2275585	7845	.8787869	7524	.3813753	3191	256	37	75.0	26.4	0.42	32731
8.5	.2190391	2660	.8805555	5228	.3821432	0877	257	8	104.9	56.2	0.35	32491
9.0	.2105024	7302	.8822559	2250	.3828815	8267	257	38	75.0	26.2	0.29	32257
9.5	.2019487	:1773	.8838881	8590	.3835902	5361	258	8	105.4	56.5	0.23	32028
10.0	—.1933790	6085	—.8854517	4244	—.3842691	2158	258	39	76.1	27.1	+0.17	931804
10.5	.1847939	:0242	.8869465	9210	.3849181	8655	259	9	107.1	58.1	0.11	31585
11.0	.1761941	4252	.8883725	3489	.3855372	4854	259	40	78.4	29.3	+0.05	31370
11.5	.1675801	8119	.8897295	7077	.3861264	0754	260	11	50.0	0.8	0.00	31160
12.0	.1589528	:2854	.8910172	:9973	.3866855	6353	260	41	81.6	32.3	—0.05	30954
12.5	—.1503129	5461	—.8922355	3174	—.3872144	1650	261	12	53.6	4.2	—0.09	930752
13.0	.1416610	8949	.8933843	3681	.3877131	6645	261	42	85.9	36.4	0.12	30554
13.5	.1329978	:2323	.8944635	4491	.3881816	1338	262	13	58.2	8.6	0.15	30360
14.0	.1243242	5594	.8954730	4605	.3886198	5728	262	43	90.8	41.1	0.17	30170
14.5	.1156406	8764	.8964126	4019	.3890276	:9814	263	14	63.5	13.7	0.19	29984
15.0	—.1069479	:1844	—.8972823	2735	—.3894050	3596	263	44	96.5	46.6	—0.20	929802
15.5	.0982468	4839	.8980821	0752	.3897520	7074	264	15	69.6	19.6	0.20	29624
16.0	.0895381	7759	.8988117	8067	.3900686	0249	264	45	103.0	52.9	0.20	29451
16.5	.0808224	:0608	.8994710	4679	.3903548	3119	265	16	76.3	26.1	0.18	29281
17.0	.0721005	3396	.9000600	0588	.3906104	5684	265	46	109.9	59.6	0.17	29115
17.5	—.0633730	6127	—.9005786	5793	—.3908355	7943	266	17	83.5	33.1	—0.14	928952
18.0	.0546409	8812	.9010269	0295	.3910300	:9897	266	48	57.3	6.8	0.11	28793
18.5	.0459047	:1456	.9014050	4095	.3911938	1543	267	18	91.2	40.6	0.07	28638
19.0	.0371649	4064	.9017128	7193	.3913269	2883	267	49	65.1	14.4	—0.02	28488
19.5	.0284223	6643	.9019502	9586	.3914296	3918	268	19	99.2	48.4	+0.04	28343
20.0	—.0196779	9205	—.9021173	1277	—.3915017	4649	268	50	73.3	22.4	+0.09	928202
20.5	.0109325	:1756	.9022140	2264	.3915432	5072	269	20	107.3	56.3	0.15	28066
21.0	—.0021867	4304	.9022404	2548	.3915542	5191	269	51	81.4	30.3	0.21	27935
21.5	+.0065589	3147	.9021965	2129	.3915347	5005	270	22	55.5	4.3	0.28	27809
22.0	.0153038	0591	.9020823	1007	.3914848	4515	270	52	89.7	38.4	0.35	27687
22.5	+.0240472	:8021	—.9018979	9183	—.3914044	3721	271	23	63.9	12.5	+0.42	927571
23.0	.0327883	5427	.9016433	6657	.3912936	2621	271	53	98.2	46.7	0.49	27461
23.5	.0415264	2804	.9013185	3430	.3911524	1218	272	24	72.5	20.9	0.56	27356
24.0	.0502609	0145	.9009237	9502	.3909806	9509	272	54	106.8	55.1	0.62	27257
24.5	.0589910	7443	.9004588	4873	.3907783	7495	273	25	81.0	29.2	0.68	27164
25.0	+.0677161	4690	—.8999239	9545	—.3905459	5180	273	56	55.3	3.4	+0.73	927076
25.5	.0764356	1883	.8993192	3518	.3902832	2562	274	26	89.4	37.4	0.79	26995
26.0	.0851488	:9010	.8986447	6794	.3899902	9641	274	57	63.6	11.5	0.84	26920
26.5	.0938550	6072	.8979005	9372	.3896670	6418	275	27	97.8	45.6	0.88	26851
27.0	.1025537	3056	.8970866	1254	.3893187	2894	275	58	72.0	19.7	0.91	26789
27.5	+.1112442	:9959	—.8962032	2440	—.3889302	9068	276	28	106.2	53.8	+0.93	926733
28.0	.1199259	6774	.8952504	2933	.3885166	4941	276	59	80.4	27.9	0.95	26685
28.5	.1285980	3493	.8942282	2731	.3880728	0512	277	30	54.5	1.9	0.96	26643
29.0	.1372599	0110	.8931368	1838	.3875991	5784	278	0	88.7	36.0	0.97	26609
29.5	.1459112	6621	.8919763	:0254	.3870955	0757	278	31	62.9	10.1	0.97	26581
30.0	+.1545512	3019	—.8907467	7978	—.3865622	5433	279	1	97.1	44.2	+0.97	926561
30.5	.1631792	:9297	.8894481	5012	.3859990	9810	279	32	71.3	18.3	0.95	26547
31.0	.1717947	5450	.8880805	1357	.3854061	3891	280	2	105.5	52.4	0.93	26542
31.5	.1803969	1470	.8866441	7013	.3847841	7680	280	33	79.7	26.5	0.89	26543
32.0	+.1889848	7347	—.8851380	1792	—.3841337	1186	281	4	53.7	0.6	+0.86	926552

	MERCURY.					VENUS.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.
239					° ′					° ′
9315	+0.3250	—0.1885	—0.1343	9.6010	325 4.3	+0.6785	+0.2451	+0.0680	9.8603	20 18.8
9320	0.3568	—0.0687	0.0730	9.5689	345 21.2	0.6368	0.3276	0.1079	9.8599	28 17.7
9325	0.3369	+0.0604	—0.0015	9.5344	9 2.5	0.5824	0.4038	0.1458	9.8594	36 17.6
9330	0.2562	0.1776	+0.0697	9.5044	36 36.3	0.5167	0.4721	0.1808	9.8590	44 18.4
9335	+0.1193	0.2549	0.1251	9.4886	67 20.0	0.4408	0.5312	0.2123	9.8587	52 20.0
9340	—0.0465	+0.2697	+0.1498	9.4941	98 49.4	+0.3563	+0.5799	+0.2396	9.8584	60 22.6
9345	0.2020	0.2206	0.1391	9.5183	128 9.1	0.2648	0.6171	0.2622	9.8579	68 26.0
9350	0.3176	0.1263	0.1001	9.5517	153 45.7	0.1681	0.6422	0.2796	9.8576	76 30.3
9355	0.3823	+0.0109	+0.0445	9.5855	175 38.9	+0.0681	0.6546	0.2915	9.8573	84 35.3
9360	0.3979	—0.1065	—0.0171	9.6151	194 31.8	—0.0333	0.6541	0.2976	9.8570	92 40.9
9365	—0.3715	—0.2120	—0.0771	9.6386	211 13.7	—0.1340	+0.6405	+0.2978	9.8567	100 47.1
9370	0.3117	0.3007	0.1303	9.6554	226 26.7	0.2321	0.6143	0.2922	9.8565	108 53.7
9375	0.2269	0.3644	0.1731	9.6655	240 44.4	0.3255	0.5758	0.2807	9.8564	117 0.7
9380	0.1252	0.4011	0.2031	9.6691	254 35.3	0.4125	0.5259	0.2636	9.8564	125 7.9
9385	—0.0144	0.4086	0.2184	9.6661	268 25.7	0.4912	0.4655	0.2412	9.8564	133 15.1
9390	+0.0974	—0.3859	—0.2174	9.6566	282 40.0	—0.5602	+0.3957	+0.2141	9.8564	141 22.3
9395	0.2014	0.3326	0.1993	9.6404	297 46.6	0.6180	0.3182	0.1826	9.8565	149 29.3
9400	0.2873	0.2501	0.1636	9.6175	314 18.4	0.6635	0.2343	0.1476	9.8567	157 36.0
9405	0.3433	0.1419	0.1119	9.5885	332 57.4	0.6958	0.1457	0.1096	9.8569	165 42.3
9410	0.3556	—0.0163	—0.0447	9.5549	354 31.6	0.7144	+0.0543	0.0695	9.8572	173 48.0
9415	+0.3117	+0.1110	+0.0282	9.5212	19 46.6	—0.7187	—0.0382	+0.0280	9.8575	181 53.0
9420	0.2063	0.2155	0.0951	9.4957	48 48.5	0.7089	0.1299	—0.0141	9.8579	189 57.3
9425	+0.0533	0.2691	0.1394	9.4881	80 12.6	0.6851	0.2192	0.0559	9.8582	198 0.9
9430	—0.1130	0.2567	0.1495	9.5022	111 8.0	0.6478	0.3041	0.0966	9.8586	206 3.6
9435	0.2548	0.1863	0.1260	9.5313	139 2.2	0.5978	0.3831	0.1355	9.8590	214 5.4
9440	—0.3501	+0.0808	+0.0788	9.5657	163 4.2	—0.5361	—0.4545	—0.1716	9.8594	222 6.2
9445	0.3942	—0.0374	+0.0197	9.5982	183 38.1	0.4640	0.5171	0.2044	9.8599	230 6.2
9450	0.3917	0.1516	—0.0420	9.6254	201 32.1	0.3828	0.5696	0.2333	9.8603	238 5.3
9455	0.3507	0.2512	0.0997	9.6462	217 33.3	0.2942	0.6110	0.2576	9.8606	246 3.4
9460	0.2798	0.3297	0.1491	9.6603	232 20.1	0.2000	0.6407	0.2769	9.8610	254 0.8
9465	—0.1872	—0.3827	—0.1870	9.6677	246 24.0	—0.1018	—0.6580	—0.2899	9.8613	261 57.4
9470	—0.0808	0.4077	0.2112	9.6686	260 11.6	—0.0017	0.6627	0.2992	9.8616	269 53.4
9475	+0.0314	0.4030	0.2200	9.6630	274 8.5	+0.0984	0.6546	0.3019	9.8619	277 48.7
9480	0.1411	0.3679	0.2122	9.6508	288 40.4	0.1967	0.6339	0.2988	9.8621	285 43.6
9485	0.2391	0.3025	0.1869	9.6319	304 17.1	0.2911	0.6010	0.2900	9.8622	293 38.1
9490	+0.3144	—0.2089	—0.1441	9.6064	321 35.1	+0.3801	—0.5568	—0.2755	9.8623	301 32.4
9495	0.3543	—0.0923	0.0855	9.5752	341 19.1	0.4617	0.5018	0.2558	9.8623	309 26.5
9500	0.3451	+0.0364	—0.0153	9.5408	4 18.6	0.5345	0.4373	0.2312	9.8623	317 20.7
9505	0.2760	0.1578	+0.0570	9.5092	31 9.0	0 5971	0.3644	0.2022	9.8622	325 15.0
9510	+0.1483	0.2447	0.1167	9.4900	61 25.2	0.6482	0.2844	0.1693	9.8621	333 9.5
9515	—0.0150	+0.2721	+0.1479	9.4914	93 0.1	+0.6870	—0.1991	—0.1332	9.8619	341 4.3
9520	0.1752	0.2339	0.1436	9.5128	122 55.1	0.7125	0.1100	0.0945	9.8616	348 59.6
9525	0.2997	0.1463	0.1090	9.5452	149 15.8	0.7244	—0.0187	0.0541	9.8613	356 55.5
9530	0.3731	+0.0332	+0.0557	9.5794	171 48.0	0.7224	+0.0729	—0.0125	9.8610	4 52.1
9535	0.3984	—0.0850	—0 0055	9.6100	191 10.8	0.7064	0.1631	+0.0292	9.8607	12 49.4
9540	—0.3792	—0.1943	—0.0662	9.6347	208 13.9	+0.6767	+0.2502	+0.0705	9.8603	20 47.5
9545	0.3250	0.2859	0.1210	9.6527	223 40.7	0.6339	0.3324	0.1103	9.8599	28 46.5
9550	0.2443	0.3545	0.1660	9.6641	238 6.6	0.5788	0.4081	0.1480	9.8595	36 46.4
9555	0.1452	0.3964	0.1986	9.6688	251 58.8	0.5124	0.4760	0.1828	9.8591	44 47.2
9560	—0.0355	0.4095	0.2167	9.6671	265 49.2	0.4360	0.5345	0.2140	9.8586	52 49.0
9565	+0.0768	—0.3924	—0.2189	9.6589	279 57.1	+0.3511	+0.5824	+0.2411	9.8582	60 51.6
9570	0.1829	0.3449	0.2040	9.6439	294 51.3	0.2592	0.6190	0.2634	9.8579	68 55.1
9575	0.2731	0.2676	0.1716	9.6223	311 4.3	0.1622	0 6433	0.2805	9.8575	76 59.4
9580	0.3357	0.1638	0.1221	9.5944	329 15.7	+0.0620	0.6549	0.2919	9.8572	85 4.4
9585	0.3573	—0.0406	—0.0580	9.5614	350 13.2	—0.0394	0.6536	0.2978	9.8569	93 10.1
9590	+0.3246	+0.0880	+0.0145	9.5272	14 44.4	—0.1400	+0.6393	+0.2977	9.8567	101 16.4
9595	0.2304	0.1990	0.0837	9.4994	43 6.7	0.2379	0.6122	0.2916	9.8565	109 23.1
9600	+0.0842	0.2639	0.1335	9.4879	74 15.7	0.3310	0.5731	0.2798	9.8564	117 30.1
9605	—0.0827	0.2639	0.1504	9.4981	105 30.3	0.4175	0.5225	0.2624	9.8564	125 37.4
9610	—0.2314	+0.2030	+0.1326	9.5252	134 5.7	—0.4957	+0.4614	+0.2397	9.8564	133 44.7

	MERCURY.					VENUS.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.	X.	Y.	Z.	Log of Rad. Vect.	Longitude in Orbit.
239					° ′					° ′
9615	—0.3362	+0.1021	+0.0889	9.5592	158 51.0	—0.5640	+0.3912	+0.2123	9.8564	141 51.9
9620	0.3897	—0.0151	+0.0312	9.5924	180 0.4	0.6211	0.3132	0.1806	9.8565	149 58.9
9625	0.3953	0.1311	—0.0306	9.6208	198 20.7	0.6657	0.2290	0.1454	9.8567	158 5.6
9630	0.3609	0.2340	0.0894	9.6428	214 39.9	0.6973	0.1402	0.1073	9.8569	166 11.9
9635	0.2949	0.3168	0.1406	9.6581	229 38.1	0.7150	+0.0487	0.0670	9.8572	174 17.6
9640	—0.2058	—0.3749	—0.1809	9.6668	243 47.9	—0.7185	—0.0439	+0.0254	9.8575	182 22.7
9645	—0.1014	0.4053	0.2078	9.6689	257 36.6	0.7078	0.1356	—0.0167	9.8579	190 27.0
9650	+0.0103	0.4062	0.2196	9.6646	271 29.9	0.6831	0.2246	0.0584	9.8582	198 30.5
9655	0.1212	0.3768	0.2150	9.6536	285 53.0	0.6451	0.3092	0.0991	9.8586	206 33.1
9660	0.2221	0.3170	0.1930	9.6360	301 15.0	0.5943	0.3877	0.1377	9.8590	214 34.8
9665	+0.3026	—0.2284	—0.1534	9.6117	318 10.5	—0.5320	—0.4586	—0.1737	9.8595	222 35.7
9670	0.3502	—0.1155	0.0975	9.5814	337 23.8	0.4592	0.5205	0.2063	9.8599	230 35.6
9675	0.3512	+0.0121	—0.0289	9.5473	359 43.0	—0.3776	—0.5724	—0.2349	9.8603	238 34.6
9680	+0.2937	+0.1368	+0.0439	9.5146	25 49.4	—0.2888	—0.6134	—0.2589	9.8607	246 32.7

	MARS.					JUPITER.				
Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.
239					° ′					° ′ ″
9320	+1.3577	—0.2365	—0.1448	0.1417	348 33.2	+4.81706	+1.09574	+0.35236	0.69484	13 22 32
9330	1.3838	—0.0998	0.0827	0.1429	354 50.7	4.79822	1.16626	0.38313	0.69485	14 17 30
9340	1.3946	+0.0379	—0.0197	0.1446	1 5.6	4.77822	1.23649	0.41380	0.69486	15 12 28
9350	1.3902	0.1753	+0.0436	0.1467	7 17.2	4.75707	1.30641	0.44437	0.69488	16 7 26
9360	1.3709	0.3107	0.1064	0.1491	13 25.1	4.73475	1.37602	0.47483	0.69491	17 2 23
9370	+1.3372	+0.4429	+0.1680	0.1518	19 28.6	+4.71127	+1.44528	+0.50518	0.69494	17 57 20
9380	1.2896	0.5706	0.2280	0.1549	25 27.3	4.68665	1.51418	0.53540	0.69497	18 52 17
9390	1.2289	0.6924	0.2856	0.1581	31 20.9	4.66090	1.58272	0.56549	0.69501	19 47 12
9400	1.1560	0.8073	0.3404	0.1615	37 9.1	4.63401	1.65088	0.59545	0.69506	20 42 7
9410	1.0719	0.9145	0.3919	0.1650	42 51.7	4.60599	1.71863	0.62526	0.69511	21 37 2
9420	+0.9777	+1.0130	+0.4397	0.1687	48 28.7	+4.57684	+1.78596	+0.65491	0.69516	22 31 55
9430	0.8745	1.1022	0.4834	0.1725	53 59.9	4.54657	1.85286	0.68441	0.69522	23 26 48
9440	0.7635	1.1815	0.5228	0.1763	59 25.5	4.51519	1.91931	0.71374	0.69529	24 21 40
9450	0.6457	1.2504	0.5576	0.1800	64 45.5	4.48271	1.98530	0.74289	0.69536	25 16 31
9460	0.5224	1.3087	0.5877	0.1838	70 0.0	4.44914	2.05080	0.77187	0.69543	26 11 21
9470	+0.3948	+1.3561	+0.6129	0.1874	75 9.2	+4.41449	+2.11581	+0.80065	0.69551	27 6 9
9480	0.2640	1.3925	0.6331	0.1910	80 13.3	4.37876	2.18030	0.82925	0.69560	28 0 57
9490	+0.1311	1.4179	0.6483	0.1944	85 12.6	4.34197	2.24427	0.85765	0.69569	28 55 43
9500	—0.0029	1.4324	0.6585	0.1977	90 7.2	4.30414	2.30770	0.88583	0.69578	29 50 27
9510	0.1368	1.4360	0.6638	0.2008	94 57.5	4.26526	2.37056	0.91381	0.69588	30 45 10
9520	—0.2697	+1.4291	+0.6641	0.2038	99 43.8	+4.22535	+2.43285	+0.94156	0.69598	31 39 52
9530	0.4007	1.4118	0.6596	0.2065	104 46.4	4.18442	2.49454	0.96909	0.69609	32 34 32
9540	0.5288	1.3844	0.6505	0.2091	109 5.5	4.14247	2.55563	0.99638	0.69621	33 29 11
9550	0.6532	1.3474	0.6368	0.2114	113 41.5	4.09952	2.61610	1.02343	0.69633	34 23 48
9560	0.7732	1.3011	0.6187	0.2135	118 14.6	4.05559	2.67594	1.05023	0.69645	35 18 22
9570	—0.8879	+1.2461	+0.5964	0.2154	122 45.3	+4.01068	+2.73514	+1.07677	0.69657	36 12 55
9580	0.9967	1.1827	0.5702	0.2170	127 13.8	3.96480	2.79368	1.10306	0.69670	37 7 26
9590	1.0989	1.1115	0.5402	0.2185	131 40.4	3.91797	2.85154	1.12907	0.69684	38 1 55
9600	1.1939	1.0330	0.5066	0.2196	136 5.5	3.87020	2.90871	1.15482	0.69698	38 56 22
9610	1.2811	0.9478	0.4698	0.2205	140 29.3	3.82149	2.96518	1.18028	0.69713	39 50 47
9620	—1.3601	+0.8565	+0.4299	0.2211	144 52.2	+3.77186	+3.02094	+1.20547	0.69728	40 45 10
9630	1.4304	0.7597	0.3873	0.2215	149 14.5	3.72132	3.07598	1.23036	0.69743	41 39 30
9640	1.4915	0.6580	0.3422	0.2216	153 36.5	3.66989	3.13028	1.25496	0.69759	42 33 48
9650	1.5431	0.5521	0.2949	0.2214	157 58.6	3.61757	3.18383	1.27927	0.69775	43 28 4
9660	1.5847	0.4427	0.2457	0.2210	162 21.0	3.56438	3.23663	1.30326	0.69791	44 22 17
9670	—1.6162	+0.3304	+0.1949	0.2204	166 44.0	+3.51034	+3.28868	+1.32694	0.69808	45 16 27
9680	—1.6373	+0.2160	+0.1429	0.2195	171 7.9	+3.45546	+3.34000	+1.35031	0.69826	46 10 35

SATURN.

Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.
289					° ′ ″
9320	−1.71011	+8.15571	+3.45429	0.95524	100 55 03
9340	1.82591	8.13373	3.45022	0.95530	101 40 00
9360	1.94139	8.11039	3.44558	0.95537	102 24 55
9380	2.05653	8.08574	3.44037	0.95544	103 9 49
9400	2.17133	8.05979	3.43460	0.95551	103 54 42
9420	−2.28579	+8.03255	+3.42828	0.95558	104 39 34
9440	2.39991	8.00402	3.42139	0.95566	105 24 26
9460	2.51366	7.97419	3.41395	0.95574	106 9 18
9480	2.62703	7.94306	3.40596	0.95583	106 54 9
9500	2.73999	7.91063	3.39743	0.95592	107 38 59
9520	−2.85251	+7.87692	+3.38835	0.95602	108 23 48
9540	2.96455	7.84195	3.37873	0.95612	109 8 35
9560	3.07609	7.80573	3.36858	0.95622	109 53 21
9580	3.18712	7.76826	3.35787	0.95632	110 38 5
9600	3.29765	7.72954	3.34661	0.95643	111 22 48
9620	−3.40766	+7.68957	+3.33480	0.95654	112 7 29
9640	3.51715	7.64835	3.32246	0.95666	112 52 10
9660	3.62610	7.60589	3.30958	0.95678	113 36 50
9680	−3.73449	+7.56222	+3.29617	0.95690	114 21 29

URANUS.

Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.
289					° ′ ″
9320	+11.60950	+14.46421	+6.18097	1.29114	53 34 5
9340	11.54497	14.50353	6.19914	1.29106	53 47 44
9360	11.48031	14.54258	6.21721	1.29099	54 1 23
9380	11.41551	14.58137	6.23517	1.29092	54 15 1
9400	11.35055	14.61992	6.25300	1.29084	54 28 40
9420	+11.28539	+14.65824	+6.27072	1.29077	54 42 19
9440	11.22001	14.69635	6.28834	1.29069	54 55 59
9460	11.15440	14.73425	6.30586	1.29062	55 9 40
9480	11.08857	14.77193	6.32329	1.29054	55 23 21
9500	11.02255	14.80937	6.34064	1.29047	55 37 3
9520	+10.95637	+14.84655	+6.35790	1.29039	55 50 45
9540	10.89005	14.88347	6.37506	1.29032	56 4 26
9560	10.82360	14.92013	6.39210	1.29024	56 18 8
9580	10.75699	14.95654	6.40901	1.29016	56 31 49
9600	10.69020	14.99270	6.42580	1.29009	56 45 31
9620	+10.62322	+15.02864	+6.44249	1.29001	56 59 14
9640	10.55602	15.06436	6.45908	1.28993	57 12 57
9660	10.48860	15.09986	6.47558	1.28986	57 26 41
9680	+10.42099	+15.13512	+6.49198	1.28978	57 40 26

NEPTUNE.

Days fr. begin'g of Julian Period.	X.	Y.	Z.	Log. of Rad. Vect.	Longitude in Orbit.
289					° ′
9320	+29.4283	−4.6530	−2.6652	1.47586	349 44.9
9360	29.4495	4.5366	2.6180	1.47584	349 59.6
9400	29.4703	4.4203	2.5708	1.47583	350 14.2
9440	29.4905	4.3039	2.5235	1.47581	350 28.8
9480	29.5101	4.1873	2.4762	1.47579	350 43.4
9520	+29.5293	−4.0706	−2.4288	1.47578	350 58.1
9560	29.5479	3.9539	2.3813	1.47576	351 12.7
9600	29.5658	3.8373	2.3339	1.47574	351 27.3
9640	29.5832	3.7205	2.2864	1.47573	351 42.0
9680	+29.6002	−3.6034	−2.2388	1.47571	351 56.6

INCLINATIONS AND NODES.

For Julian Date 2399400.

Planets.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Incr. in 100 Days.
	° ′ ″	″	° ′ ″	″
Mercury	7 1 8.7	+0.01947	46 38 11	11.469
Venus	3 31 21.8	+0.01232	75 24 39	9.004
Mars	1 51 2.2	−0.00611	48 26 55	7.600
Jupiter	1 18 39.9	−0.05632	99 0 33	9.990
Saturn	2 29 22.3	−0.03768	112 25 57	8.566
Uranus	0 46 29.7	+0.00834	73 16 25	4.898
Neptune	1 46 59.0		130 11 40	

LOGARITHMS OF MASSES.

Sun's = 1.

Mercury,	93.3129	The Earth,	94.44985	Jupiter,	96.979689	Uranus,	95.60371
Venus,	94.4089	Mars,	93.57176	Saturn,	96.45573	Neptune,	95 72630

ECLIPSES IN 1857.

In the year 1857 there will be but two Eclipses; both of the Sun; viz.: —

I. A Total Eclipse of the Sun, March 25, 1857, visible at Washington, with the following elements.

Washington Mean Time of ☌ in Right Ascension, March $25^{d.}\ 5^{h.}\ 16^{m.}\ 32^{s.}.4$

Sun's and Moon's R.A.	$0^{\circ}\ 19'\ 12''.42$	Hourly Motions	$9^{s}.09$ and $132^{s}.03$
Sun's Declination	+2 4 46.3	Hourly Motion	$+\ 0'\ 58''.9$
Moon's Declination	+1 58 39.1	Hourly Motion	+18 2.0
Moon's Longitude	5 11 19.2	Hourly Motion	37 26.7
Moon's Latitude	—0 5 40.8	Hourly Motion	+3 28.1
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 3.7
Moon's Equa. Hor. Par.	60 53.9	True Semidiameter	16 34.7

From these elements may be deduced the following results: —

Eclipse begins on the Earth, March $25^{d.}\ 2^{h.}\ 42^{m.}.6$, Washington Mean Time, in longitude 127° 51′.7 West of Washington, and latitude 32° 30′.9 South.

Central Eclipse begins $3^{h.}\ 38^{m.}.4$, in longitude 141° 43′.8 West of Washington, and latitude 34° 18′.1 South.

Central Eclipse at noon, $5^{h.}\ 16^{m.}.5$, in longitude 77° 39′.5 West of Washington, and latitude 3° 45′.8 South.

Central Eclipse ends, $7^{h.}\ 4^{m.}.9$, in longitude 13° 49′.4 West of Washington, and latitude 24° 3′.1 North.

Eclipse ends on the Earth, $8^{h.}\ 0^{m.}.8$, in longitude 27° 41′.9 West of Washington, and latitude 25° 50′.9 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G	log H.	μ
h. m.				9.999	9.999	8.4	8.6	° ′ ″
2 40	—1.31894	—0.29737	—1.37087	797	652	89899	04849	38 30 35.6
2 45	1.27682	0.27398	1.34749	797	652	90220	05094	39 45 37.0
2 50	1.23470	0.25060	1.32411	797	652	90540	05340	41 0 38.3
2 55	1.19258	0.22722	1.30073	796	651	90861	05585	42 15 39.6
3 0	1.15047	0.20383	1.27734	796	651	91181	05830	43 30 40.9
3 5	1.10835	0.18044	1.25395	796	651	91501	06076	44 45 42.2
3 10	1.06623	0.15705	1.23056	795	650	91821	06321	46 0 43.5
3 15	1.02410	0.13366	1.20717	795	650	92140	06566	47 15 44.8
3 20	0.98198	0.11027	1.18378	794	650	92459	06811	48 30 46.2
3 25	0.93986	0.08688	1.19039	794	649	92778	07056	49 45 47.5
3 30	0.89773	0.06350	1.13699	794	649	93096	07301	51 0 48.8
3 35	0.85560	0.04011	1.11359	793	649	93414	07546	52 15 50.2
3 40	0.81347	—0.01672	1.09020	793	648	93732	07790	53 30 51.5
3 45	0.77134	+0.00667	1.06681	793	648	94050	08034	54 45 52.8
3 50	0.72921	0.03006	1.04342	792	647	94368	08278	56 0 54.1
3 55	0.68709	0.05345	1.02003	792	646	94685	08522	57 15 55.5
4 0	0.64496	0.07685	0.99663	792	646	95002	08766	58 30 56.8
4 5	0.60283	0.10024	0.97324	792	646	95319	09010	59 45 58.1
4 10	0.56070	0.12363	0.94984	791	645	95636	09254	61 0 59.4
4 15	0.51857	0.14702	0.92644	791	645	95952	09497	62 16 0.8
4 20	0.47644	0.17041	0.90305	791	644	96268	09741	63 31 2.1
4 25	0.43430	0.19380	0.87965	790	644	96584	09984	64 46 3.4
4 30	0.39217	0.21719	0.85625	790	644	96900	00227	66 1 4.7
4 35	0.35004	0.24058	0.83285	790	643	97215	10470	67 16 6.0
4 40	0.30791	0.26397	0.80945	790	643	97530	10713	68 31 7.3
4 45	0.26578	0.28736	0.78606	789	642	97845	10955	69 46 8.7
4 50	0.22364	0.31075	0.76266	789	642	98160	11198	71 1 10.0
4 55	0.18151	0.33414	0.73926	789	642	98475	11440	72 16 11.3
5 0	0.13938	0.35752	0.71587	789	642	98789	11682	73 31 12.6
5 5	0.09725	0.38090	0.69247	789	642	99103	11924	74 46 13.9
5 10	0.05512	0.40429	0.66907	788	641	99417	12166	76 1 15.2
5 15	—0.01298	0.42767	0.64568	788	641	99730	12408	77 16 16.5
5 20	+0.02915	0.45106	0.62228	788	640	*0044	12650	78 31 17.9
5 25	0.07129	0.47444	0.59888	787	640	00357	12892	79 46 19.2
5 30	0.11342	0.49783	0.57549	787	640	00670	13133	81 1 20.5
5 35	0.15555	0.52121	0.55209	787	639	00983	13374	82 16 21.8
5 40	0.19769	0.54459	0.52869	786	639	01295	13615	83 31 23.2
5 45	0.23982	0.56797	0.50529	786	638	01607	13856	84 46 24.5
5 50	0.28196	0.59135	0.48189	785	638	01919	14097	86 1 25.8
5 55	0.32410	0.61473	0.45850	785	637	02231	14338	87 16 27.2
6 0	0.36623	0.63812	0.43511	785	637	02543	14578	88 31 28.5
6 5	0.40836	0.66150	0.41171	785	637	02854	14819	89 46 29.8
6 10	0.45049	0.68489	0.38831	784	636	03165	15059	91 1 31.1
6 15	0.49263	0.70827	0.36492	784	636	03476	15299	92 16 32.4
6 20	0.53476	0.73165	0.34153	784	635	03787	15539	93 31 33.8
6 25	0.57690	0.75503	0.31813	783	635	04098	15779	94 46 35.1
6 30	0.61903	0.77842	0.29473	783	635	04408	16019	96 1 36.4
6 35	0.66116	0.80180	0.27133	783	634	04718	16259	97 16 37.8
6 40	0.70329	0.82519	0.24793	782	634	05028	16498	98 31 39.1
6 45	0.74543	0.84857	0.22454	782	633	05337	16737	99 46 40.4
6 50	0.78756	0.87195	0.20114	782	633	05647	16976	101 1 41.8
6 55	0.82969	0.89534	0.17784	781	632	05956	17215	102 16 43.1
7 0	+0.87184	+0.91873	—0.15435	781	632	06265	17454	103 31 44.4

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

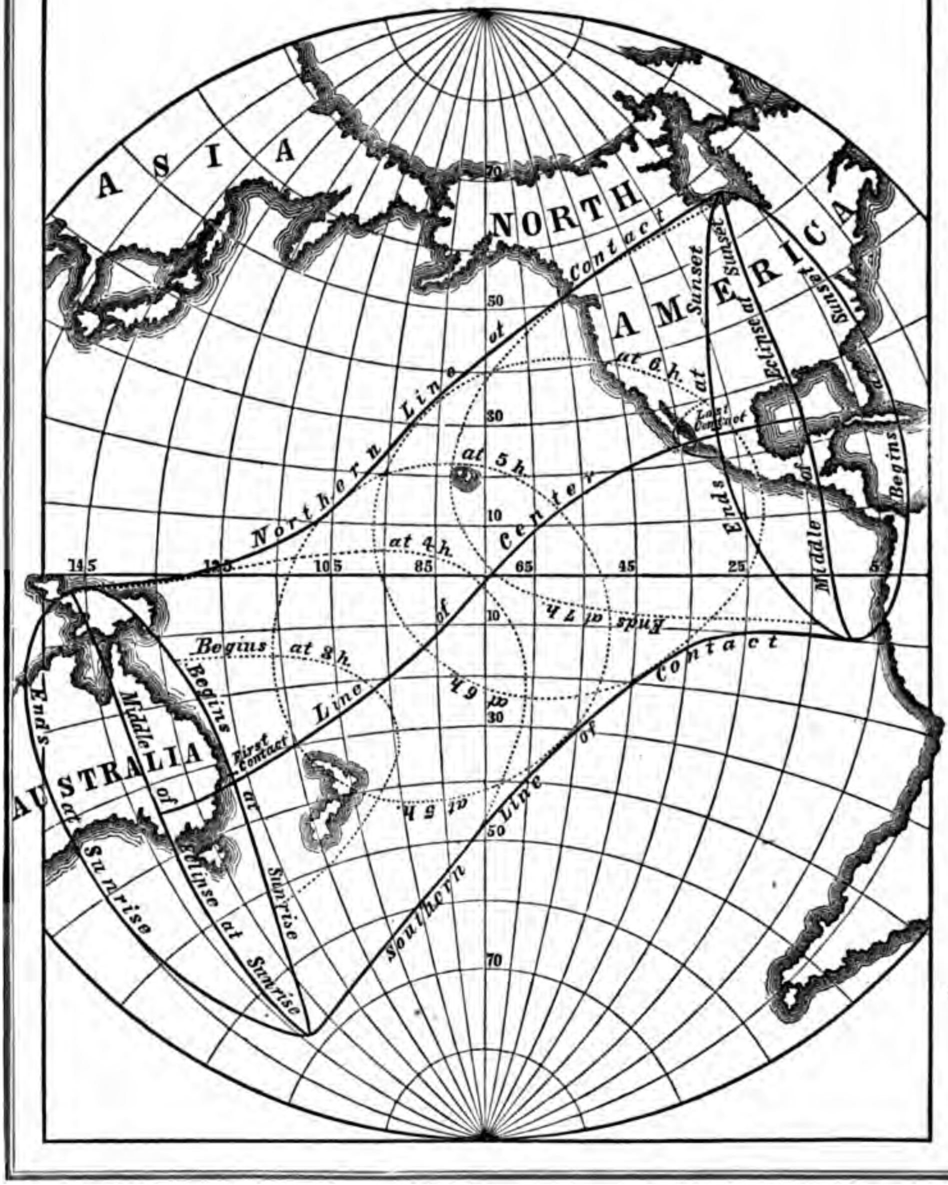
Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h. m.				9.999	9.999	8.5	8.6	° ′ ″
7 5	+0.91396	+0.94211	—0.13095	781	632	06574	17693	104 46 45.7
7 10	0.95609	0.96549	0.10755	780	631	06882	17932	106 1 47.0
7 15	0.99822	0.98887	0.08416	780	631	07190	18170	107 16 48.3
7 20	1.04035	1.01225	0.06076	780	630	07498	18409	108 31 49.7
7 25	1.08249	1.03563	0.03736	780	630	07806	18647	109 46 51.0
7 30	1.12462	1.05902	—0.01397	779	629	08114	18885	111 1 52.3
7 35	1.16675	1.08240	+0.00943	779	629	08421	19123	112 16 53.6
7 40	1.20888	1.10577	0.03283	779	628	08728	19361	113 31 55.0
7 45	1,25101	1.12915	0.05622	779	628	09035	19598	114 46 56.3
7 50	1.29314	1.15253	0.07962	778	628	09342	19836	116 1 57.6
7 55	1.33528	1.17590	0.10302	778	627	09648	20074	117 16 59.0
8 0	1.37741	1.19927	0.12641	778	627	09954	20311	118 32 0.3
8 5	+1.41953	+1.22264	+0.14981	778	627	10260	20549	119 47 1.6

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h. m.			h. m.		
3 30	—0.60933	—0.59119	5 25	—0.07137	—0.05307
3 35	0.58594	0.56780	5 30	0.04799	0.02967
3 40	0.56255	0.54440	5 35	0.02460	—0.00627
3 45	0.53916	0.52100	5 40	—0.00121	+0.01713
3 50	0.51577	0.49760	5 45	+0.02217	0.04053
3 55	0.49238	0.47420	5 50	0.04555	0.06392
4 0	0.46900	0.45081	5 55	0.06894	0.08731
4 5	0.44561	0.42741	6 0	0.09233	0.11071
4 10	0.42222	0.40401	6 5	0.11571	0.13411
4 15	0.39883	0.38062	6 10	0.13910	0.15751
4 20	0.37544	0.35722	6 15	0.16248	0.18091
4 25	0.35205	0.33382	6 20	0.18587	0.20430
4 30	0.32866	0.31043	6 25	0.20926	0.22769
4 35	0.30527	0.28703	6 30	0.23264	0.25109
4 40	0.28188	0.26363	6 35	0.25602	0.27449
4 45	0.25849	0.24024	6 40	0.27940	0.29789
4 50	0.23510	0.21684	6 45	0.30278	0.32128
4 55	0.21171	0.19345	6 50	0.32616	0.34468
5 0	0.18832	0.17005	6 55	0.34954	0.36808
5 5	0.16493	0.14665	7 0	0.37293	0.39147
5 10	0.14154	0.12325	7 5	0.39631	0.41486
5 15	0.11815	0.09986	7 10	0.41969	0.43826
5 20	—0.09476	—0.07646	7 15	+0.44307	+0.46165

A, μ, log E and log F are given in the Table for Penumbra, and the values of log G and log H are obtained from corresponding values for Penumbra by increasing log G by 0.000303, and decreasing log H by 0.000236.

TOTAL ECLIPSE
OF
MARCH 25, 1857.



CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A′.	B′.	C′.
h. m.						
2 40	+8424.0	+4678.0	+4676.0	+140.40	+77.97	+77.93
2 55	8425.0	4677.5	4677.0	140.42	77.96	77.95
3 10	8425.5	4677.0	4678.0	140.42	77.95	77.97
3 25	8426.0	4677.5	4679.0	140.43	77.96	77.98
3 40	8426.0	4678.0	4679.0	140.43	77.97	77.98
3 55	8426.0	4679.0	4680.0	140.43	77.98	77.99
4 10	8426.0	4678.5	4680.0	140.43	77.98	77.99
4 25	8426.0	4678.0	4679.5	140.43	77.97	77.99
4 40	8426.5	4677.5	4678.5	140.44	77.96	77.98
4 55	8427.0	4677.0	4678.0	140.45	77.95	77.97
5 10	8427.5	4676.5	4678.0	140.46	77.94	77.97
5 25	8427.0	4676.0	4678.5	140.45	77.93	77.98
5 40	8426.5	4676.5	4679.0	140.44	77.94	77.98
5 55	8427.0	4677.0	4678.5	140.45	77.95	77.98
6 10	8427.5	4676.5	4678.5	140.46	77.94	77.98
6 25	8427.5	4676.0	4679.0	140.46	77.93	77.98
6 40	8428.0	4676.5	4678.5	140.47	77.94	77.98
6 55	8427.5	4677.0	4678.0	140.46	77.93	77.97
7 10	8427.0	4677.5	4678.0	140.45	77.96	77.97
7 25	8426.5	4677.0	4678.0	140.44	77.95	77.97
7 40	8426.0	4676.5	4678.0	140.43	77.94	77.97
7 55	8426.0	4675.0	4678.0	140.43	77.92	77.97
8 10	+8426.0	+4674.0	+4678.0	+140.43	+77.90	+77.97

II. An Annular Eclipse of the Sun, September 17, 1857, invisible at Washington, with the following elements: —

Washington Mean Time of ☌ in Right Ascension, September 17$^{d.}$ 12$^{h.}$ 15$^{m.}$ 19$^{s.}$.15.

Sun's and Moon's R.A.	11$^{h.}$ 42$^{m.}$ 27$^{s.}$.38	Hourly Motions	110$^{s.}$.44 and 8$^{s.}$.98
Sun's Declination	+ 1° 54′ 2″.2	Hourly Motion	— 0′ 58″.2
Moon's Declination	+ 2 6 11.2	Hourly Motion	—15 4.7
Moon's Longitude	175 8 23.1	Hourly Motion	31 18.2
Moon's Latitude	+ 0 11 8.2	Hourly Motion	— 2 53.5
Sun's Equa. Hor. Par.	8.6	True Semidiameter	15 58.0
Moon's Equa. Hor. Par.	55 36.6	True Semidiameter	15 10.9

From these elements may be deduced the following results: —

Eclipse begins on the Earth, September 17$^{d.}$ 9$^{h.}$ 30$^{m.}$.0, Washington Mean Time, in longitude 235° 22′.4 West of Washington, and in latitude 36° 17′.7 North.

Central Eclipse begins, 10$^{h.}$ 35$^{m.}$.0, in longitude 251° 50′.0 West of Washington, and in latitude 40° 17′.4 North.

Central Eclipse at noon, 12$^{h.}$ 15$^{m.}$.3, in longitude 185° 16′.8 West of Washington, and in latitude 14° 33′.0 North.

Central Eclipse ends, 14$^{h.}$ 20$^{m.}$.1, in longitude 127° 6′.7 West of Washington, and in latitude 18° 11′.6 South.

Eclipse ends on the Earth, 15$^{h.}$ 25$^{m.}$.2, in longitude 143° 32′.0 West of Washington, and in latitude 22° 11′.9 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h. m.				9.999	9.999	8.4	8.5	° ′ ″
9 25	—1.29690	+1.50018	+0.38062	819	681	66464	86379	142 42 15.0
9 30	1.25883	1.47901	0.35943	819	681	66134	86124	143 57 16.5
9 35	1.22076	1.45785	0.33824	819	681	65797	85869	145 12 17.9
9 40	1.18269	1.43668	0.31704	820	681	65460	85614	146 27 19.3
9 45	1.14462	1.41551	0.29585	820	682	65124	85358	147 42 20.8
9 50	1.10654	1.39434	0.27465	821	682	64787	85103	148 57 22.2
9 55	1.06847	1.37317	0.25346	821	683	64450	84848	150 12 23.6
10 0	1.03040	1.35200	0.23226	821	684	64112	84592	151 27 25.1
10 5	0.99233	1.33083	0.21107	821	684	63774	84336	152 42 26.5
10 10	0.95425	1.30966	0.18987	821	684	63436	84080	153 57 27.9
10 15	0.91617	1.28849	0.16867	822	685	63098	83824	155 12 29.3
10 20	0.87810	1.26732	0.14747	822	686	62760	83568	156 27 30.7
10 25	0.84002	1.24614	0.12627	822	686	62421	83312	157 42 32.1
10 30	0.80194	1.22497	0.10507	822	686	62082	83055	158 57 33.6
10 35	0.76387	1.20380	0.08387	823	686	61743	82798	160 12 35.0
10 40	0.72579	1.18262	0.06267	823	687	61403	82541	161 27 36.4
10 45	0.68772	1.16145	0.04147	823	687	61063	82284	162 42 37.8
10 50	0.64964	1.14027	+0.02027	824	688	60723	82027	163 57 39.2
10 55	0.61156	1.11910	—0.00093	824	688	60383	81770	165 12 40.6
11 0	0.57349	1.09792	0.02213	824	688	60042	81512	166 27 42.1
11 5	0.53542	1.07674	0.04333	824	689	59701	81254	167 42 43.5
11 10	0.49735	1.05556	0.06453	824	689	59360	80996	168 57 44.9
11 15	0.45927	1.03438	0.08574	825	689	59018	80738	170 12 46.4
11 20	0.42120	1.01321	0.10694	825	690	58673	80480	171 27 47.8
11 25	0.38313	0.99203	0.12814	825	690	58338	80222	172 42 49.2
11 30	0.34506	0.97085	0.14935	825	690	57993	79964	173 57 50.6
11 35	0.30699	0.94967	0.17055	825	691	57650	79705	175 12 52.0
11 40	0.26892	0.92849	0.19175	826	691	57307	79446	176 27 53.4
11 45	0.23085	0.90731	0.21295	826	692	56965	79187	177 42 54.9
11 50	0.19278	0.88613	0.23415	827	692	56621	78928	178 57 56.3
11 55	0.15471	0.86495	0.25535	827	693	56277	78669	180 12 57.7
12 0	0.11664	0.84376	0.27656	827	693	55934	78410	181 27 59.2
12 5	0.07857	0.82258	0.29776	827	693	55590	78150	182 44 0.6
12 10	0.04050	0.80140	0.31896	828	694	55246	77890	183 58 2.0
12 15	—0.00243	0.78021	0.34016	828	694	54901	77630	185 13 3.4
12 20	+0.03561	0.75903	0.36136	829	695	54556	77370	186 28 4.9
12 25	0.07371	0.73784	0.38256	829	695	54211	77110	187 43 6.3
12 30	0.11178	0.71665	0.40377	829	695	53866	76851	188 58 7.7
12 35	0.14984	0.69547	0.42497	829	696	53520	76591	190 13 9.1
12 40	0.18791	0.67428	0.44617	830	696	53174	76330	191 28 10.5
12 45	0.22597	0.65310	0.46737	830	697	52828	76069	192 43 11.9
12 50	0.26404	0.63191	0.48857	831	697	52482	75808	193 58 13.3
12 55	0.30211	0.61072	0.50977	831	697	52135	75548	195 13 14.7
13 0	0.34018	0.58954	0.53098	831	697	51788	75287	196 28 16.2
13 5	0.37824	0.56836	0.55218	831	698	51440	75026	197 43 17.6
13 10	0.41631	0.54718	0.57338	831	698	51092	74764	198 58 19.0
13 15	0.45437	0.52599	0.59458	832	699	50745	74503	200 13 20.4
13 20	0.49244	0.50480	0.61577	832	699	50397	74241	201 28 21.8
13 25	0.53050	0.48361	0.63697	832	699	50049	73979	202 43 23.2
13 30	0.56857	0.46242	0.65817	832	699	49700	73717	203 58 24.7
13 35	0.60663	0.44124	0.67937	833	700	49351	73455	205 13 26.1
13 40	0.64469	0.42005	0.70057	833	700	49002	73192	206 28 27.5
13 45	+0.68276	+0.39887	—0.72177	833	701	48652	72930	207 43 28.9

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

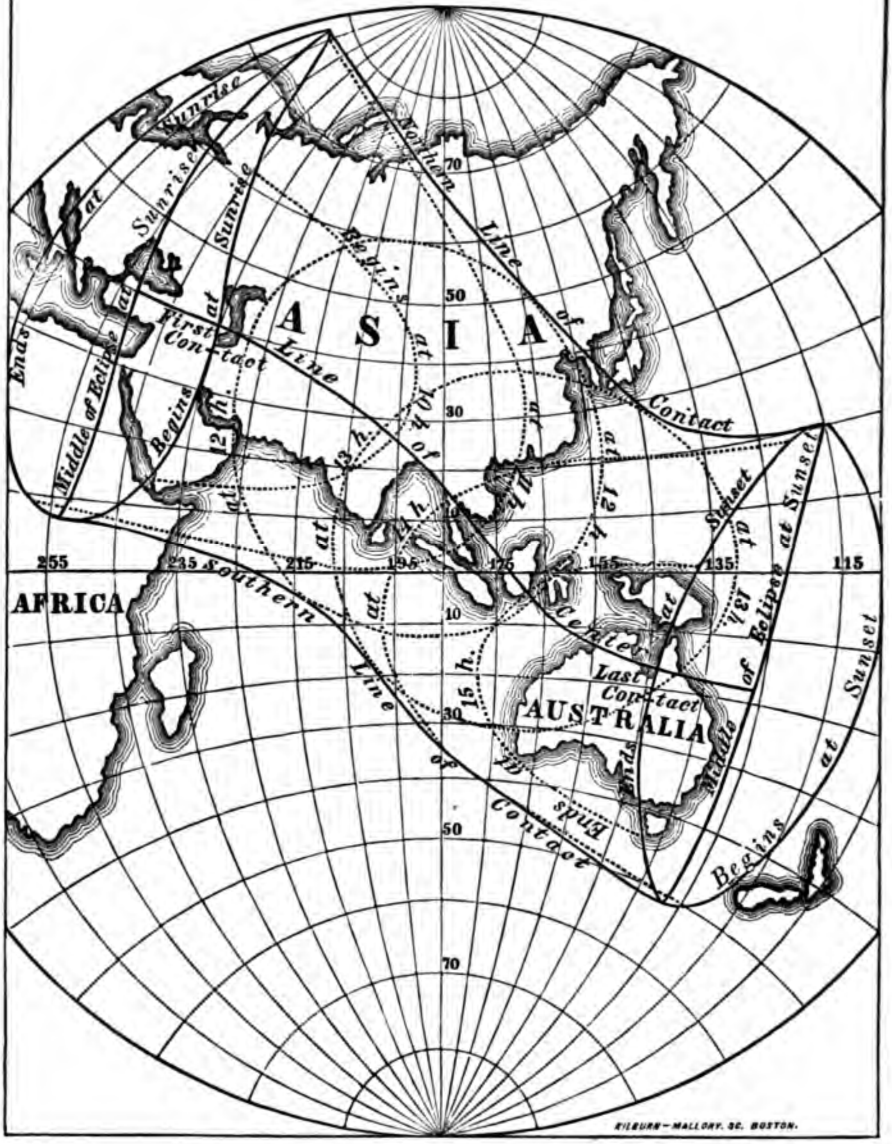
Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h. m.				9.999	9.999	8.4	8.5	
13 50	+0.72082	+0.37768	—0.74296	834	701	48302	72667	208° 58′ 30″.3
13 55	0.75888	0.35649	0.76416	834	702	47951	72404	210 13 31.7
14 0	0.79695	0.33530	0.78536	834	702	47601	72142	211 28 33.2
14 5	0.83500	0.31412	0.80656	834	702	47250	71879	212 43 34.6
14 10	0.87306	0.29293	0.82775	835	703	46899	71615	213 58 36.0
14 15	0.91112	0.27175	0.84895	835	703	46548	71352	215 13 37.4
14 20	0.94918	0.25056	0.87014	835	704	46196	71088	216 28 38.8
14 25	0.98724	0.22937	0.89134	835	704	45844	70825	217 43 40.2
14 30	1.02530	0.20818	0.91254	835	704	45492	70561	218 58 41.7
14 35	1.06335	0.18700	0.93374	836	705	45139	70297	220 13 43.1
14 40	1.10141	0.16582	0.95493	836	705	44787	70032	221 28 44.6
14 45	1.13946	0.14464	0.97613	836	706	44434	69768	222 43 46.0
14 50	1.17751	0.12345	0.99732	837	706	44080	69503	223 58 47.4
14 55	1.21557	0.10226	1.01852	837	706	43726	69238	225 13 48.9
15 0	1.25363	0.08107	1.03972	837	706	43373	68973	226 28 50.3
15 5	1.29168	0.05989	1.06091	837	707	43018	68708	227 43 51.7
15 10	1.32973	0.03870	1.08211	838	707	42663	68442	228 58 53.1
15 15	1.36778	+0.01751	1.10330	838	707	42309	68177	230 13 54.5
15 20	1.40584	—0.00368	1.12449	839	708	41954	67911	231 28 56.0
15 25	1.44389	0.02487	1.14569	839	708	41599	67645	232 43 57.4
15 30	+1.48194	—0.04605	—1.16689	839	708	41243	67380	233 58 58.8

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h. m.			h. m.		
10 30	+0.67904	+0.65100	12 30	+0.17070	+0.14218
10 35	0.65787	0.62980	12 35	0.14952	0.12098
10 40	0.63669	0.60860	12 40	0.12833	0.09978
10 45	0.61552	0.58740	12 45	0.10715	0.07858
10 50	0,59434	0.56620	12 50	0.08597	0.05738
10 55	0.57316	0.54500	12 55	0.06478	0.03618
11 0	0.55198	0.52381	13 0	0.04359	+0.01497
11 5	0.53080	0.50261	13 5	+0.02240	—0.00623
11 10	0.50962	0.48141	13 10	—0.00122	0.02743
11 15	0.48844	0.46021	13 15	0.01996	0.04863
11 20	0.46726	0.43901	13 20	0.04115	0.06983
11 25	0.44608	0.41781	13 25	0.06234	0.09103
11 30	0.42490	0.39660	13 30	0.08352	0.11223
11 35	0.40372	0.37540	13 35	0.10470	0.13343
11 40	0.38254	0.35420	13 40	0.12589	0.15463
11 45	0.36136	0.33300	13 45	0.14708	0.17583
11 50	0.34017	0.31180	13 50	0.16827	0.19703
11 55	0.31899	0.29060	13 55	0.18946	0.21823
12 0	0.29781	0.26939	14 0	0.21064	0.23942
12 5	0.27663	0.24819	14 5	0.23182	0.26062
12 10	0.25544	0.22699	14 10	0.25301	0.28182
12 15	0.23426	0.20579	14 15	0.27419	0.30301
12 20	0.21307	0.18459	14 20	0.29538	0.32421
12 25	+0.19189	+0.16339	14 25	—0.31657	—0.34541

A, μ, log E and log F are given in the Table for Penumbra, and the values of log G

ANNULAR ECLIPSE
OF
SEPT. 17, 1857.



and log H for Shadow are obtained from corresponding values for Penumbra by increasing log G by 0.000343, and decreasing log H by 0.000258.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
h. m.						
9 25	+6345.0	—3528.3	—3531.7	+105.75	—58.80	—58.86
9 40	6345.4	3528.3	3532.1	105.76	58.80	58.87
9 55	6345.8	3528.3	3532.5	105.77	58.80	58.87
10 10	6346.2	3528.3	3532.9	105.77	58.80	58.88
10 25	6346.7	3528.3	3533.3	105.78	58.80	58.89
10 40	6346.3	3528.7	3533.7	105.78	58.81	58.89
10 55	6345.9	3529.1	3534.1	105.76	58.82	58.90
11 10	6345.5	3529.5	3534.5	105.76	58.82	58.91
11 25	6345.0	3530.0	3535.0	105.75	58.83	58.92
11 40	6345.0	3530.4	3535.0	105.75	58.84	58.92
11 55	6345.0	3530.8	3535.9	105.75	58.84	58.92
12 10	6345.0	3531.2	3535.0	105.75	58.85	58.92
12 25	6345.0	3531.7	3535.0	105.75	58.86	58.92
12 40	6345.0	3531.7	3534.6	105.75	58.86	58.91
12 55	6345.0	3531.7	3534.2	105.75	58.86	58.90
13 10	6345.0	3531.7	3533.8	105.75	58.86	58.90
13 25	6345.0	3531.7	3533.3	105.75	58.86	58.89
13 40	6344.6	3531.7	3533.3	105.74	58.86	58.89
13 55	6344.2	3531.7	3533.3	105.74	58.86	58.89
14 10	6343.8	3531.7	3533.3	105.73	58.86	58.89
14 25	6343.3	3531.7	3533.3	105.72	58.86	58.89
14 40	6342.9	3531.4	3533.3	105.71	58.85	58.89
14 55	6342.5	3530.9	3533.3	105.71	58.85	58.89
15 10	6342.1	3530.5	3533.3	105.70	58.84	58.89
15 25	+6341.7	—3530.0	—3533.3	+105.69	—58.83	—58.89

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Jan. 1	20 Piscium	6	+39	—50	10 23.5	+ 5 29 48	—0.1052	0.5230	+.2804	—8.7923	9.9992
1	24 Piscium	6½	+86	+ 7	12 49.3	+ 7 51 1	+0.9770	.5222	+.2810	—8.8381	.9990
1	B.A.C. 8365	6½	+41	—47	18 44.4	—10 25 4	—0.0563	.5226	+.2825	—8.3552	9.9999
2	Jupiter		+82	—14	0 7.7	— 5 12 45	+0.6023	.5184	+.2810	—7.8929	0.0000
2	B.A.C. 57	6½	+17	—77	0 55.7	— 4 25 26	—0.5354	.5229	+.2830	+8.1928	9.9999
2	44 Piscium	6	+58	—31	4 38.1	— 0 50 6	+0.2541	.5229	+.2829	+8.3014	.9999
2	B.A.C. 221	6	+40	—49	15 39.7	+ 9 50 31	—0.0880	.5265	+.2808	+8.8992	.9996
2	B.A.C. 274	6½	+60	—29	21 12.3	— 8 47 30	+0.2811	.5276	+.2784	+8.9979	.9978
2	ε Piscium	4	+ 7	—81	22 41.1	— 7 21 32	—0.7357	.5266	+.2778	+9.0932	.9966
3	ζ Piscium	6	+90	+ 9	3 47.5	— 2 25 2	+0.9804	.5304	+.2751	+9.0745	.9969
3	π Piscium	5	+ 8	—79	14 42.7	+ 8 8 40	—0.7105	.5332	+.2669	+9.2963	.9913
4	27 Arietis	6	+28	—54	14 54.3	+ 7 30 45	—0.3116	.5503	+.2362	+9.4677	.9804
4	B.A.C. 782	6½	—30	—72	16 3.8	+ 8 37 49	—1.2291	.5480	+.2346	+9.4958	.9776
4	40 Arietis	6	+90	+ 7	22 32.4	— 9 7 28	+0.8245	.5585	+.2246	+9.4827	.9790
5	47 Arietis	6	+ 6	—70	2 33.7	— 5 14 51	—0.7181	.5564	+.2173	+9.5360	.9727
5	ε Arietis	4½	—39	—70	3 2.6	— 4 46 58	—1.2939	.5539	+.2172	+9.5497	.9708
5	ζ Arietis	4½	+65	—16	9 38.7	+ 1 34 31	+0 3438	.5653	+.2032	+9.5447	.9715
5	τ^1 Arietis	5	+90	+ 6	12 15.8	+ 4 5 48	+0.7502	.5696	+.1968	+9.5470	.9712
5	τ^2 Arietis	6	+90	+47	12 54.6	+ 4 43 8	+1.2826	.5727	+.1947	+9.5388	.9723
5	66 Arietis	6½	+24	—52	15 12.4	+ 6 55 44	—0.3779	.5678	+.1903	+9.5794	.9662
5	9 Tauri	6	+36	—39	18 40.9	+10 16 20	—0.1595	.5705	+.1834	+9.5872	.9649
5	*q* Pleiadum	5½	+ 5	—66	21 49.9	—10 41 52	—0.7093	.5710	+.1750	+9.6066	.9613
5	*b* Pleiadum	4½	+16	—58	21 51.9	—10 39 59	—0.5252	.5712	+.1749	+9.6035	.9618
5	*m* Pleiadum	7	—38	—67	21 53.8	—10 38 17	—1.2543	.5685	+.1749	+9.6159	.9594
5	ε Tauri	5	— 4	—67	21 59.4	—10 32 42	—0.8620	.5702	+.1746	+9.6096	.9607
5	1 Pleiadum	8	+22	—52	22 5.6	—10 26 49	—0.4085	.5722	+.1744	+9.6022	.9621
5	2 Pleiadum	8½	— 2	—67	22 8.3	—10 24 9	—0.8335	.5703	+.1743	+9.6096	.9607
5	3 Pleiadum	8½	+20	—54	22 9.3	—10 23 13	—0.4467	.5722	+.1742	+9.6030	.9620
5	4 Pleiadum	8	+ 6	—66	22 9.9	—10 22 41	—0.7001	.5710	+.1742	+9.6074	.9611
5	5 Pleiadum	9	—11	—66	22 10.4	—10 22 9	—0.9936	.5698	+.1742	+9.6123	.9601
5	6 Pleiadum	9	+ 9	—65	22 11.4	—10 21 12	—0.6484	.5714	+.1741	+9.6066	.9613
5	*c* Pleiadum	5	+ 5	—66	22 14.6	—10 18 7	—0.7192	.5711	+.1739	+9.6080	.9610
5	7 Pleiadum	8	+23	—50	22 15.8	—10 16 58	—0.3841	.5727	+.1738	+9.6023	.9621
5	B.A.C. 1155	7	+78	— 4	22 16.0	—10 16 49	+0.5181	.5767	+.1738	+9.5865	.9650
5	*k* Pleiadum	7½	— 7	—66	22 16.3	—10 16 31	—0.9042	.5706	+.1738	+9.6111	.9604
5	*l* Pleiadum	7½	— 5	—66	22 19.7	—10 13 14	—0.8676	.5707	+.1737	+9.6106	.9604
5	9 Pleiadum	8½	+17	—57	22 25.4	—10 7 43	—0.5103	.5724	+.1736	+9.6049	.9616
5	*d* Pleiadum	5	+30	—43	22 27.2	—10 5 59	—0.2604	.5734	+.1735	+9.6007	.9624
5	10 Pleiadum	8	+14	—60	22 29.9	—10 3 26	—0.5632	.5721	+.1734	+9.6061	.9613
5	11 Pleiadum	8½	+23	—51	22 35.0	— 9 58 23	—0.3959	.5731	+.1732	+9.6034	.9619
5	12 Pleiadum	7½	0	—66	22 42.5	— 9 51 19	—0.7966	.5712	+.1729	+9.6106	.9604
5	13 Pleiadum	8½	+30	—43	22 45.1	— 9 48 48	—0.2587	.5737	+.1728	+9.6016	.9622
5	14 Pleiadum	9	+43	—31	22 47.5	— 9 46 30	—0.0204	.5748	+.1728	+9.5976	.9630
5	15 Pleiadum	8½	+24	—50	22 49.9	— 9 44 10	—0.3797	.5733	+.1727	+9.6039	.9618
5	16 Pleiadum	9½	+41	—33	22 50.4	— 9 43 44	—0.0641	.5746	+.1727	+9.5985	.9628
5	17 Pleiadum	8	+46	—28	22 50.9	— 9 43 12	+0.0299	.5750	+.1727	+9.5969	.9631
5	18 Pleiadum	8	+23	—50	22 51.0	— 9 43 6	—0.3877	.5732	+.1727	+9.6041	.9617
5	*p* Pleiadum	7½	+25	—49	22 51.7	— 9 42 25	—0.3624	.5733	+.1726	+9.6037	.9618
5	19 Pleiadum	8	+52	—24	22 52.1	— 9 42 4	+0.1233	.5754	+.1726	+9.5953	.9634
5	20 Pleiadum	8	— 3	—66	22 52.3	— 9 41 51	—0.8395	.5712	+.1726	+9.6118	.9602
5	21 Pleiadum	8½	— 7	—66	22 53.3	— 9 40 54	—0.9048	.5710	+.1726	+9.6129	.9600
5	22 Pleiadum	8	+36	—38	22 53.3	— 9 40 53	—0.1571	.5142	+.1725	+9.6002	.9625
5	23 Pleiadum	8½	+50	—25	22 54.6	— 9 39 37	+0.0882	.5753	+.1725	+9.5960	.9633
5	24 Pleiadum	8	+16	—58	22 54.7	— 9 39 32	—0.5284	.5725	+.1725	+9.6067	.9612
5	η Tauri	3	+26	—48	22 55.4	— 9 38 55	—0.3413	.5733	+.1725	+9.6035	.9618
5	25 Pleiadum	8½	+55	—21	22 58.6	— 9 35 47	+0.1685	0.5757	+.1724	+9.5948	9.9635

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Jan. 5	26 Pleiadum	9	+59	—18	23 1.1	— 9 33 18	+0.2429	0.5759	+.1724	+9.5937	9.9637
5	27 Pleiadum	8½	+16	—57	23 2.2	— 9 32 48	—0.5110	.5728	+.1721	+9.6072	.9611
5	28 Pleiadum	7	+72	— 9	23 16.7	— 9 18 26	+0.4087	.5769	+.1720	+9.5916	.9641
5	29 Pleiadum	8	+16	—58	23 19.2	— 9 17 2	—0.5190	.5729	+.1719	+9.6077	.9611
5	*s* Pleiadum	7½	+45	—30	23 30.5	— 9 5 9	+0.0046	.5751	+.1716	+9.5992	.9627
5	*f* Pleiadum	4½	+35	—39	23 35.5	— 9 0 18	—0.1792	.5742	+.1715	+9.6027	.9620
5	*h* Pleiadum	5½	+30	—43	23 36.0	— 8 59 52	—0.2620	.5740	+.1715	+9.6042	.9617
5	30 Pleiadum	8½	+44	—30	23 36.7	— 8 59 11	—0.0077	.5751	+.1714	+9.5998	.9626
5	31 Pleiadum	8	+16	—58	23 37.9	— 8 58 2	—0.5194	.5728	+.1714	+9.6086	.9608
5	32 Pleiadum	8	+17	—56	23 39.9	— 8 56 6	—0.4987	.5729	+.1714	+9.6084	.9609
5	33 Pleiadum	8½	+25	—48	23 41.8	— 8 54 16	—0.3587	.5735	+.1713	+9.6061	.9613
5	34 Pleiadum	7½	+56	—19	23 49.5	— 8 46 51	+0.2043	.5761	+.1708	+9.5968	.9631
5	35 Pleiadum	9	+26	—47	23 49.9	— 8 46 31	—0.3325	.5738	+.1707	+9.6060	.9614
5	36 Pleiadum	9	+28	—45	23 53.5	— 8 43 5	—0.2955	.5741	+.1705	+9.5956	.9615
5	37 Pleiadum	8	+21	—52	23 54.0	— 8 42 35	—0.4278	.5734	+.1705	+9.6078	.9610
5	38 Pleiadum	8	+49	—26	23 55.2	— 8 41 23	+0.0813	.5757	+.1704	+9.5992	.9627
6	39 Pleiadum	8	+15	—59	0 6.3	— 8 30 41	—0.5415	.5731	+.1696	+9.6103	.9605
6	40 Pleiadum	7½	+46	—28	0 16.8	— 8 20 36	+0.0256	.5758	+.1689	+9.6012	.9623
6	33 Tauri	6	+90	+43	2 46.6	— 5 56 41	+1.2170	.5824	+.1639	+9.5876	.9648
6	36 Tauri	6½	+90	+ 9	5 39.3	— 3 10 40	+0.7137	.5822	+.1560	+9.6044	.9617
6	χ Tauri	5½	+54	—18	12 48.0	+ 3 41 4	+0.1567	.5847	+.1370	+9.6306	.9563
7	B.A.C. 1648	6½	+39	—25	11 6.4	+ 1 5 2	—0.1104	.5884	+.0673	+9.6830	.9426
7	6 Tauri	2	+ 6	—58	13 5.4	+ 2 59 5	—0.6645	.5915	+.0609	+9.6784	.9440
7	B.A.C. 1709	6½	—34	—61	14 21.1	+ 4 11 38	—1.1795	.5884	+.0576	+9.6865	.9415
7	B.A.C. 1746	6½	+76	+ 5	16 45.1	+ 6 29 41	+0.4692	.5981	+.0512	+9.6654	.9477
7	B.A.C. 1772	6	—22	—61	17 58.9	+ 7 40 25	—1.0637	.5902	+.0446	+9.6874	.9413
7	136 Tauri	5	+90	+21	23 18.2	—11 14 33	+0.7183	.6002	+.0283	+9.6655	.9476
8	B.A.C. 1882	6½	+ 9	—53	0 29.0	—10 5 37	—0.6181	.5930	+.0250	+9.6844	.9422
8	ϰ Aurigæ	4	—34	—61	7 33.9	— 3 18 22	—1.1722	.5892	+.0017	+9.6930	.9395
8	B.A.C. 2097	6½	+48	—13	13 15.9	+ 2 9 30	+0.0538	.5947	—.0177	+9.6760	.9447
8	49 Aurigæ	6½	+56	— 6	15 6.4	+ 3 55 23	+0.1934	.5948	—.0242	+9.6735	.9454
8	53 Aurigæ	6½	— 5	—61	16 17.5	+ 5 3 34	—0.8337	.5889	—.0274	+9.6870	9414
8	54 Aurigæ	6	+38	—22	16 45.3	+ 5 30 15	—0.1114	.5932	—.0274	+9.6771	.9444
8	28 Geminor.	6	—11	—61	18 43.3	+ 7 23 24	—0.9189	.5879	—.0338	+9.6871	.9413
9	47 Geminor.	6	+90	+12	5 1.8	— 6 43 14	—0.6317	.5906	—.0683	+9.6584	.9496
9	53 Geminor.	6	+12	—53	6 46.8	— 5 2 24	—0.5764	.5843	—.0714	+9.6736	.9453
9	59 Geminor.	6½	+10	—56	10 11.2	— 1 46 2	—0.6027	.5815	—.0833	+9.6703	.9463
9	ι Geminor.	4	— 3	—62	10 37.2	— 1 21 10	—0.8124	.5804	—.0834	+9.6728	.9456
9	b^1 Geminor.	5½	—52	—62	12 1.7	— 0 0 2	—1.2764	.5763	—.0892	+9.6774	.9442
9	b^2 Geminor.	5½	—23	—62	12 13.3	+ 0 11 6	—1.0849	.5775	—.0893	+9.6746	.9451
9	B.A.C. 2472	6	—26	—62	12 33.4	+ 0 30 24	—1.1146	.5767	—.0891	+9.6746	.9451
9	υ Geminor.	5	+29	—37	14 40.1	+ 2 32 5	—0.2796	.5795	—.0949	+9.6602	.9490
9	*c* Geminor.	6	+79	+ 3	17 57.9	+ 5 42 9	+0.5151	.5811	—.1063	+9.6438	.9532
9	φ Geminor.	5	—12	—63	21 44.3	+ 9 19 47	—0.9477	.5723	—.1147	+9.6590	.9494
10	ω^1 Cancri	6	+50	—21	0 46.6	—11 44 54	+0.0889	.5747	—.1226	+9.6385	.9545
10	ω^2 Cancri	6½	+67	— 7	1 6.8	—11 25 38	+0.3608	.5745	—.1252	+9.6337	.9555
10	ψ^1 Cancri	6½	— 8	—64	4 35.1	— 8 5 3	—0.9020	.5666	—.1330	+9.6459	.9527
10	ψ^2 Cancri	4	+12	—58	4 41.6	— 7 58 47	—0.5798	.5680	—.1331	+9.6409	.9539
10	λ Cancri	6	+67	— 9	8 55.4	— 3 54 33	+0.3625	.5679	—.1441	+9.6172	.9591
10	υ^2 Cancri	6½	+28	—44	12 19.6	— 0 37 54	—0.2947	.5620	—.1525	+9.6197	.9586
10	υ^3 Cancri	6	+21	—51	13 33.7	+ 0 33 30	—0.4271	.5610	—.1550	+9.6187	.9588
11	ξ Cancri .	5	—39	—68	6 10.3	— 7 25 14	—1.2738	.5409	—.1899	+9.5851	.9652
11	79 Cancri	6	—45	—68	6 37.2	— 6 59 18	—1.3098	.5413	—.1899	+9.5842	.9654
11	B.A.C. 3138	6	— 3	—68	8 7.0	— 5 32 33	—0.8561	.5407	—.1935	+9.5712	.9676
12	37 Leonis	6	+75	—14	14 22.1	— 0 16 47	+0.4980	0.5178	—.2354	+9.3968	9.9861

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Jan. 13	*l* Leonis	5	+34	—53	7 10.0	— 7 58 6	—0.2083	0.5034	—.2498	+9.2921	9 9915
13	χ Leonis	5	+90	+19	15 36.4	+ 0 13 47	+1.1148	.4999	—.2546	+9.1493	.9956
13	B.A.C. 3837	6½	— 4	—81	20 26.1	+ 4 55 21	—0.9206	.4946	—.2569	+9.1868	.9948
14	σ Leonis	4	+60	—29	0 19.9	+ 8 46 39	+0.2837	.4957	—.2594	+9.0741	.9969
14	β Virginis	3½	+87	—11	16 39.3	+ 0 39 13	+0.6536	.4876	—.2623	+8.6516	.9996
14	B.A.C. 4043	6½	+90	— 5	21 25.5	+ 5 13 42	+0.7656	.4861	—.2626	+8.3636	9.9999
15	13 Virginis	6	+ 7	—85	8 31.2	— 7 58 22	—0.7028	.4835	—.2621	+6.0746	0.0000
15	η Virginis	3½	—10	—90	9 13.7	— 7 16 58	—1.0212	.4834	—.2620	+7.3457	0.0000
15	B.A.C. 4255	6½	+59	—31	19 55.2	+ 3 7 15	+0.2736	.4825	—.2597	—8.7963	9.9992
16	B.A.C. 4294	6½	+85	+16	0 55.7	+ 8 0 3	+1.1071	.4820	—.2582	—8.9831	.9980
16	B.A.C. 4394	5½	+82	+12	12 48.7	— 4 27 56	+1.0481	.4830	—.2528	—9.1552	.9955
16	α Virginis	1	+80	+19	22 9.4	+ 4 39 40	+1.1347	.4848	—.2475	—9.2571	.9928
17	*h* Virginis	6	—13	—90	2 30.5	+ 8 53 46	—1.0287	.4888	—.2450	—9.2143	.9941
17	86 Virginis	6	+29	—58	9 39.8	— 8 8 41	—0.2384	.4903	—.2397	—9.3074	.9909
17	B.A.C. 4679	6½	+52	—32	19 44.1	+ 1 38 53	+0.2387	.4938	—.2307	—9.3922	.9864
17	B.A.C. 4700	5½	+75	+ 7	23 9.1	+ 4 58 8	+0.9412	.4937	—.2276	—9.4303	.9836
19	B.A.C. 5023	6	+66	+ 2	8 49.1	—10 22 25	+0.8405	.5106	—.1842	—9.5711	.9676
19	42 Libræ	5½	+47	—20	21 23.5	+ 1 51 10	+0.4478	.5249	—.1645	—9.5981	.9629
19	B.A.C. 5197	6	+66	+16	23 0.3	+ 3 22 58	+1.0254	.5253	—.1591	—9.6138	.9598
20	A Scorpii	5	+65	+26	2 39.6	+ 6 55 4	+1.1445	.5265	—.1530	—9.6243	.9576
20	B.A.C. 5253	6	+42	—31	2 48.8	+ 7 4 2	+0.2548	.5305	—.1521	—9.6111	.9604
20	B.A.C. 5254	6	+11	—67	2 50.7	+ 7 5 51	—0.3580	.5327	—.1521	—9.6016	.9622
20	B.A.C. 5255	6	+65	+32	2 56.1	+ 7 11 5	+1.1967	.5267	—.1521	—9.6257	.9573
20	3 Scorpii	6	+65	+13	3 8.2	+ 7 22 42	+0.9870	.5280	—.1518	—9.6230	.9579
20	B.A.C. 5286	6½	+43	—29	4 59.7	+ 9 10 36	+0.2771	.5319	—.1487	—9.6165	.9593
20	B A.C. 5314	6	+65	+32	7 10.8	+11 17 24	+1.0035	.5315	—.1438	—9.6335	.9556
20	B.A.C. 5347	5	+64	+52	9 21.6	—10 36 12	+1.3044	.5315	—.1394	—9.6409	.9539
20	σ Scorpii	3½	+14	—60	15 20.2	— 4 49 41	—0.2489	.5427	—.1267	—9.6299	.9564
20	α Scorpii	1½	+38	—31	19 1.3	— 1 16 3	+0.2407	.5416	—.1187	—9.6436	.9532
20	22 Scorpii	5	—49	—90	19 25.1	— 0 53 7	—1.2340	.5480	—.1180	—9.6227	.9580
21	B.A.C. 5800	6½	—25	—90	14 35.1	— 6 23 48	—0.8612	.5619	—.0703	—9.6542	9506
21	43 Ophiuchi	6	+28	—35	18 25.8	— 2 41 27	+0.1685	.5596	—.0607	—9.6716	.9459
22	3 Sagittarii	5	—11	—83	4 35.7	+ 7 5 50	—0.5494	.5691	—.0327	—9.6684	.9469
22	B.A.C. 6063	6½	— 3	—68	8 22.7	+10 44 22	—0.3660	.5702	—.0221	—9.6722	.9458
22	B.A.C. 6072	6½	+36	—24	9 9.5	+11 29 27	+0.3601	.5670	—.0202	—9.6819	.9429
22	γ^1 Sagittarii	4	+61	+42	11 41.7	—10 4 5	+1.2231	.5631	—.0133	—9.6935	.9393
22	B.A.C. 6120	6½	+16	—43	12 31.3	— 9 16 24	+0.0264	.5699	—.0101	—9.6783	.9440
22	B.A.C. 6127	5	+16	—43	13 3.2	— 8 45 39	+0.0201	.5699	—.0089	—9.6782	.9440
22	B.A.C. 6190	6½	+28	—30	16 52.1	— 5 5 28	+0.2488	.5702	+.0094	—9.6814	.9431
22	B.A.C. 6191	6½	+ 7	—53	16 52.3	— 5 5 15	—0.1416	.5722	+.0024	—9.6763	.9446
22	B.A.C. 6220	6½	+17	—42	18 45.6	— 3 16 16	+0.0446	.5715	+.0077	—9.6786	.9439
23	φ Sagittarii	3½	—51	—90	4 26.1	+ 6 2 1	—1.1814	.5801	+.0375	—9.6590	.9494
23	τ Sagittarii	3½	+21	—43	13 3.8	— 9 40 0	+0.0270	.5745	+.0603	—9.6698	.9464
23	B.A.C. 6628	6	+62	+ 3	20 11.2	— 2 49 10	+0.8154	.5702	+.0822	—9.6736	.9454
23	B.A.C. 6666	6	+27	—39	22 23.3	— 0 42 4	+0.0996	.5737	+.0888	—9.6611	.9488
26	γ Capricor.	3½	—57	—90	5 23.0	+ 4 15 30	—1.3633	.5559	+.2223	—9.4735	.9799
26	κ Capricor.	5	+71	+22	6 29.0	+ 5 19 12	+1.1445	.5479	+.2245	—9.5239	.9743
26	δ Capricor.	3	—34	—90	8 27.4	+ 7 12 27	—1.2131	.5540	+.2255	—9.4603	.9811
26	29 Aquarii	6	+73	+36	15 20.1	—10 8 14	+1.2888	.5433	+ 2392	—9.4818	.9791
26	42 Aquarii	6	—40	—90	21 52.5	— 3 49 19	—1.3023	.5462	+.2492	—9.3696	.9877
26	45 Aquarii	6	+10	—80	22 52.2	— 2 51 35	—0.5684	.5446	+.2500	—9.3843	.9869
27	50 Aquarii	6	+55	—29	1 20.9	— 0 27 55	+0.2953	.5411	+.2537	—9.3914	.9864
27	B.A.C. 7835	6½	+58	—27	3 54.0	+ 1 59 56	+0.3285	.5399	+.2567	—9.3728	.9876
27	70 Aquarii	6	+52	—34	12 28.2	+10 16 55	+0.2004	.5367	+.2669	—9.2926	.9915
27	h^1 Aquarii	6	+13	—80	20 16.1	— 6 10 42	—0.5755	0.5347	+.2736	—9.1690	9.9952

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Jan. 28	h^2 Aquarii	7	+18	—74	20 20.8	— 6 6 3	—0.4932	0.5347	+.2738	—9.1710	9.9952
28	h^3 Aquarii	7	+31	—57	20 36.6	— 5 50 44	—0.2358	.5342	+.2742	—9.1802	.9950
28	h^4 Aquarii	7½	+27	—62	21 14.5	— 5 14 7	—0.3098	.5340	+.2746	- 9.1679	.9952
28	φ Aquarii	5	—13	—90	0 35.7	— 1 59 31	—1.0493	.5339	+.2774	- 9.0747	.9969
28	χ Aquarii	5½	+82	+ 8	1 46.9	— 1 50 34	+0.9872	.5311	+.2779	- 9.1700	.9952
28	96 Aquarii	5½	—34	—90	2 59.5	+ 0 19 40	—1.3077	.5331	+.2783	—9.0125	.9977
28	20 Piscium	6	+52	—37	16 34.0	—10 32 15	+0.1494	.5289	+.2850	—8.7927	.9992
28	VENUS		— 4	—90	15 9.2	—11 54 18	—0.9369	.4813	+.2677	—8.7018	.9994
29	JUPITER		+90	+22	13 32.7	+ 9 46 3	+1.1937	.5216	+.2828	—8.3744	.9999
29	24 Piscium	6½	+86	+25	18 56.9	— 8 13 55	+1.2257	.5273	+.2859	—8.8381	.9990
29	B.A.C. 8365	6½	+56	—34	0 45.3	— 2 36 43	+0.2095	.5277	+.2867	—8.3552	.9999
29	B.A.C. 57	6½	+81	—59	6 50.2	+ 3 16 30	—0.2590	.5274	+.2867	+8.1923	.9999
29	44 Piscium	6	+76	—18	10 28.9	+ 6 48 11	+0.5285	.5277	+.2863	+8.3015	.9999
30	60 Piscium	6	—37	—84	20 46.5	— 7 4 27	—1.3474	.5276	+.2835	+9.0163	.9977
30	B.A.C. 221	6	+56	—34	21 31.6	— 6 40 12	+0.1983	.5286	+.2835	+8.9006	.9986
30	B.A.C. 274	6½	+79	—15	2 50.3	— 1 22 6	+0.5675	.5308	+.2804	+8.9978	.9978
30	ε Piscium	4	+22	—68	4 18.3	+ 0 3 1	—0.4452	.5293	+.2773	+9.0932	.9966
30	ζ Piscium	6	+90	+31	9 22.0	+ 4 56 46	+1.2674	.5335	+.2764	+9.0746	.9969
31	π Piscium	5	+23	—65	20 13.3	— 8 33 30	—0.4184	.5352	+.2672	+9.2963	.9913
Feb. 1	27 Arietis	6	+43	—39	20 26.2	— 9 9 56	—0.0329	.5482	+.2345	+9.4677	.9804
1	B.A.C. 782	6½	— 8	—72	21 36.2	— 8 2 22	—0.9551	.5463	+.2331	+9.4958	.9776
1	μ Arietis	5½	—32	—71	1 25.2	— 4 21 30	—1.2451	.5474	+.2266	+9.5213	.9746
1	40 Arietis	6	+90	+25	4 7.6	— 1 44 49	+1.0998	.5559	+.2226	+9.4827	.9790
1	47 Arietis	6	+20	—59	8 11.2	+ 2 10 1	—0.4548	.5540	+.2150	+9.5360	.9727
1	ε Arietis	4½	—14	—69	8 40.4	+ 2 38 13	—1.0349	.5520	+.2138	+9.5497	.9708
1	ζ Arietis	4½	+86	— 2	15 21.0	+ 9 4 13	+0.6046	.5621	+.2002	+9.5447	.9715
1	τ^1 Arietis	5	+90	+23	18 0.2	+11 37 33	+1.0275	.5657	+.1940	+9.5470	.9712
2	66 Arietis	6½	+38	—38	20 59.2	— 9 30 0	—0.1258	.5633	+.1880	+9.5794	.9662
2	7 Tauri	6	+26	—49	23 26.6	— 7 8 10	—0.3593	.5598	+.1818	+9.6090	.9608
2	9 Tauri	6	+49	—27	0 26.7	— 6 10 25	+0.0738	.5667	+.1791	+9.5872	.9649
2	*g* Pleiadum	5½	+19	—55	3 43.0	— 3 1 22	—0.4728	.5662	+.1718	+9.6066	.9613
2	*b* Pleiadum	4½	+29	—45	3 44.9	— 2 59 32	—0.2878	.5670	+.1717	+9.6035	.9618
2	*m* Pleiadum	7	—14	—66	3 51.0	— 2 53 39	—1.0113	.5632	+.1716	+9.6159	.9594
2	2 Tauri	5	+10	—63	3 52.6	— 2 52 7	—0.5767	.5652	+.1716	+9.6096	.9607
2	1 Pleiadum	8	+35	—39	3 58.8	— 2 46 7	—0.1700	.5672	+.1715	+9.6022	.9621
2	2 Pleiadum	8½	+12	—62	4 1.7	— 2 43 26	—0.5920	.5652	+.1714	+9.6096	.9607
2	3 Pleiadum	8½	+33	—41	4 2.6	— 2 42 28	—0.2091	.5670	+.1714	+9.6030	.9620
2	4 Pleiadum	8	+19	—55	4 3.2	— 2 41 56	—0.4645	.5657	+.1713	+9.6074	.9611
2	5 Pleiadum	9	+ 2	—66	4 3.8	— 2 41 23	—0.7605	.5644	+.1713	+9.6123	.9601
2	6 Pleiadum	9	+22	—52	4 4.8	— 2 40 26	—0.4127	.5666	+.1713	+9.6066	.9613
2	*c* Pleiadum	5	+18	—56	4 8.0	— 2 37 20	—0.4845	.5642	+.1715	+9.6080	.9610
2	7 Pleiadum	8	+36	—37	4 9.2	— 2 36 6	—0.1461	.5665	+.1715	+9.6023	.9621
2	B.A.C. 1155	7	+90	+10	4 9.4	— 2 35 56	+0.7636	.5657	+.1715	+9.5865	.9650
2	*k* Pleiadum	7½	+ 8	—65	4 9.7	— 2 35 37	—0.6701	.5642	+.1715	+9.6111	.9604
2	*l* Pleiadum	7½	+10	—64	4 13.2	— 2 32 18	—0.6350	.5629	+.1713	+9.6107	.9604
2	9 Pleiadum	8½	+30	—44	4 19.0	— 2 26 41	—0.2735	.5657	+.1712	+9.6049	.9616
2	*d* Pleiadum	5	+43	—31	4 20.9	— 2 24 56	—0.0215	.5672	+.1711	+9.6007	.9624
2	10 Pleiadum	8	+27	—47	4 23.5	— 2 22 21	—0.3271	.5650	+.1711	+9.6061	.9613
2	11 Pleiadum	8½	+36	—38	4 28.5	— 2 17 33	—0.1593	.5665	+.1707	+9.6034	.9619
2	12 Pleiadum	7½	+14	—60	4 36.4	— 2 10 1	--0.5626	.5629	+.1701	+9.6106	.9604
2	13 Pleiadum	8½	+43	—31	4 39.0	— 2 7 30	—0.0215	.5671	+.1698	+9.6016	.9622
2	14 Pleiadum	9	+57	—19	4 41.4	— 2 4 7	+0.2197	.5700	+.1698	+9.5976	.9630
2	15 Pleiadum	8½	+37	—37	4 43.9	— 2 2 45	—0.1427	.5657	+.1696	+9.6039	.9618
2	16 Pleiadum	9½	+55	—21	4 44.4	— 2 2 19	+0.1756	.5706	+.1696	+9.5985	.9628
2	17 Pleiadum	8	+61	—16	4 44.9	— 2 1 48	+0.2701	.5708	+.1696	+9.5969	.9631
2	18 Pleiadum	8	+36	—37	4 45.0	— 2 1 41	—0.1507	0.5657	+.1696	+9.6041	9.9617

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			Northern.	Southern.		H	$\dot{Y}$	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Feb. 2	*p* Pleiadum	7½	+37	—36	4 45.8	— 2 0 58	—0.1297	0.5660	+.1696	+9.6037	9.9618
2	19 Pleiadum	8	+67	—11	4 46.1	— 2 0 38	+0.3636	.5706	+.1696	+9.5953	.9634
2	20 Pleiadum	8	+12	—62	4 46.4	— 2 0 22	—0.6049	.5624	+.1696	+9.6118	.9602
2	21 Pleiadum	8½	+ 8	—65	4 47.4	— 1 59 24	—0.6719	.5622	+.1696	+9.6130	.9600
2	22 Pleiadum	8	+49	—26	4 47.4	— 1 59 24	+0.8189	.5684	+.1696	+9.6002	.9625
2	23 Pleiadum	8½	+64	—13	4 48.7	— 1 58 10	+0.3291	.5702	+.1695	+9.5960	.9633
2	24 Pleiadum	8	+29	—45	4 49.0	— 1 57 53	—0.2929	.5647	+.1695	+9.6067	.9612
2	η Tauri	3	+39	—35	4 49.1	— 1 57 48	—0.1050	.5654	+.1694	+9.6035	.9618
2	25 Pleiadum	8½	+70	— 9	4 52.7	— 1 54 5	+0.4093	.5709	+.1693	+9.5948	.9635
2	26 Pleiadum	9	+76	— 5	4 55.2	— 1 51 51	+0.4850	.5714	+.1691	+9.5937	.9637
2	27 Pleiadum	8½	+31	—43	5 6.9	— 1 40 34	—0.2739	.5642	+.1687	+9.6072	.9611
2	28 Pleiadum	7	+90	+ 3	5 11.1	— 1 36 35	+0.6516	.5724	+.1685	+9.5916	.9641
2	29 Pleiadum	8	+29	—44	5 13.7	— 1 34 7	—0.2833	.5642	+.1685	+9.6077	.9611
2	*s* Pleiadum	7½	+59	—17	5 25.2	— 1 23 2	+0.2446	.5691	+.1681	+9.5992	.9627
2	*f* Pleiadum	4½	+48	—27	5 30.3	— 1 18 9	+0.0581	.5665	+.1678	+9.6027	.9620
2	*h* Pleiadum	5½	+43	—31	5 30.7	— 1 17 41	—0.0253	.5667	+.1678	+9.6042	.9617
2	30 Pleiadum	8½	+58	—18	5 31.5	— 1 16 59	+0.2279	.5688	+.1678	+9.5998	.9626
2	31 Pleiadum	8	+29	—44	5 32.7	— 1 15 49	—0.2848	.5638	+.1678	+9.6086	.9608
2	32 Pleiadum	8	+30	—43	5 34.7	— 1 13 51	—0.2639	.5639	+.1676	+9.6084	.9609
2	33 Pleiadum	8½	+38	—36	5 36.6	— 1 12 1	—0.1229	.5650	+.1675	+9.6061	.9613
2	34 Pleiadum	7½	+73	— 7	5 44.5	— 1 4 27	+0.4443	.5702	+.1672	+9.5968	.9631
2	35 Pleiadum	9	+39	—35	5 44.5	— 1 4 6	—0.0966	.5650	+.1672	+9.6060	.9614
2	36 Pleadium	9	+41	—33	5 48.5	— 1 0 36	—0.0593	.5652	+.1670	+9.6056	.9615
2	37 Pleiadum	8	+35	—39	5 49.0	— 1 0 5	—0.1756	.5642	+.1670	+9.6078	.9610
2	38 Pleiadum	8	+64	—14	5 50.3	— 0 58 53	+0.3204	.5691	+.1670	+9.5991	.9627
2	39 Pleiadum	8	+28	—46	6 1.7	— 0 47 56	—0.3072	.5632	+.1667	+9.6104	.9605
2	40 Pleiadum	7½	+60	—16	6 12.4	— 0 37 39	+0.2655	.5672	+.1670	+9.6012	.9623
2	36 Tauri	6½	+90	+23	11 40.6	+ 4 38 5	+0.9475	.5664	+.1521	+9.6044	.9617
2	*p* Tauri	6	—24	—64	14 13.8	+ 7 5 22	—1.1179	.5694	+.1455	+9.6435	.9533
3	χ Tauri	5½	+68	— 7	18 56.6	+11 37 9	+0.3721	.5789	+.1328	+9.6306	.9563
3	B.A.C. 1648	6½	+48	—16	17 46.0	+ 9 32 11	+0.0646	.5864	+.0628	+9.6689	.9467
3	β Tauri	2	+16	—47	19 47.9	+11 29 11	—0.5024	.5838	+.0560	+9.6784	.9440
3	B.A.C. 1709	6½	—19	—61	21 5.5	—11 16 22	—1.0316	.5816	+.0542	+9.6865	.9415
3	B.A.C. 1746	6½	+90	+25	23 32.9	— 8 54 52	+0.6405	.5904	+.0479	+9.6654	.9477
4	B.A.C. 1772	6	—10	—61	0 48.6	— 7 42 19	—0.9116	.5820	+.0429	+9.6874	.9413
4	136 Tauri	5	+90	+30	6 15.1	— 2 29 0	+0.8811	.5924	+.0269	+9.6655	.9476
4	B.A.C. 1882	6½	+18	—43	7 28.3	— 1 18 43	—0.4746	.5852	+.0226	+9.6844	.9422
4	κ Aurigæ	4	—21	—61	14 43.1	+ 5 38 28	—1.0491	.5817	—.0014	+9.6930	.9395
4	B.A.C. 2097	6½	+55	— 7	20 34.1	+11 15 18	+0.1775	.5872	—.0187	+9.6760	.9447
4	49 Aurigæ	6½	+64	0	22 27.2	—10 56 8	+0.3145	.5875	—.0250	+9.6735	.9404
4	53 Aurigæ	6½	+ 3	—61	23 40.0	— 9 46 15	—0.7259	.5816	—.0288	+9.6870	.9414
5	54 Aurigæ	6	+45	—17	0 8.5	— 9 18 51	+0.0030	.5852	—.0305	+9.6771	.9444
5	28 Geminor.	6	— 4	—61	2 9.3	— 7 22 53	—0.8179	.5860	—.0372	+9.6732	.9455
5	47 Geminor.	6	+90	+18	12 41.8	+ 2 44 29	+0.7290	.5838	—.0682	+9.6584	.9496
5	53 Geminor.	6	+17	—48	14 29.6	+ 4 28 8	—0.4980	.5766	—.0741	+9.6736	.9453
5	59 Geminor.	6½	+15	—51	17 52.4	+ 7 41 11	—0.5230	.5748	—.0840	+9.6703	.9463
5	ι Geminor.	4	+ 2	—62	18 24.7	+ 8 14 0	—0.7434	.5737	—.0852	+9.6728	.9456
5	b^1 Geminor.	5½	—41	—62	20 3.5	+ 9 49 2	—1.2340	.5698	—.0899	+9.6774	.9442
5	b^2 Geminor.	5½	—18	—62	20 3.3	+ 9 48 52	—1.0240	.5714	—.0907	+9.6746	.9451
5	B.A.C. 2472	6	—21	—62	20 23.9	+10 8 37	—1.0563	.5710	—.0910	+9.6746	.9451
5	υ Geminor.	5	+33	—34	22 33.2	—11 47 3	—0.2158	.5740	—.0966	+9.6602	.9490
6	*c* Geminor.	6	+86	+ 6	1 55.1	— 9 32 54	+0.5798	.5752	—.1075	+9.6438	.9532
6	φ Geminor.	5	— 9	—63	5 45.0	— 4 51 40	—0.9059	.5407	—.1169	+9.6439	.9532
6	ω^1 Cancri	6	+52	—19	8 51.9	— 1 51 47	+0.1325	.5682	—.1252	+9.6385	.9545
6	ω^2 Cancri	6½	+70	— 5	9 12.5	— 1 31 57	+0.4061	.5692	—.1258	+9.6337	.9555
6	ψ^1 Cancri	6½	— 6	—64	12 44.7	+ 1 52 16	—0.8760	0.5611	—.1341	+9.6459	9.9527

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Feb. 6	ψ^2 Cancri	4	+14	—56	12 51.3	+ 1 58 42	—0.5502	0.5624	—.1347	+9.6409	9 9539
6	λ Cancri	6	+69	— 8	17 9.5	+ 6 7 25	+0.3885	.5626	—.1456	+9.6172	.9591
6	υ^2 Cancri	6½	+30	—43	20 37.1	+ 9 27 25	—0.2818	.5572	—.1536	+9.6197	.9586
6	υ^3 Cancri	6	+22	—51	21 52.4	+10 40 1	—0.4175	.5560	—.1699	+9.6187	.9588
7	B.A.C. 3138	6	— 5	—68	16 40.6	+ 4 48 57	—0.8946	.5385	—.1944	+9.5712	.9676
8	37 Leonis	6	+68	—19	23 8.1	+10 17 51	+0.3927	.5174	—.2372	+9.3968	.9861
9	l Leonis	5	+26	—61	15 56.7	+ 2 36 32	—0.3552	.5047	—.2519	+9.2920	.9915
10	χ Leonis	5	+90	+ 7	0 12.2	+10 37 27	+0.9502	.5012	—.2574	+9.1492	.9956
10	B.A.C. 3837	6½	—15	—81	5 11.3	— 8 31 32	—1.0912	.4961	—.2599	+9.1866	.9948
10	σ Leonis	4	+50	—38	9 4.0	— 4 45 27	+0.1002	.4956	—.2616	+9.0740	.9969
10	89 Leonis	6	+90	+48	16 20.2	+ 2 18 20	+1.4110	.4937	—.2637	+8.8272	.9990
11	β Virginis	3½	+70	—22	1 18.5	+11 2 17	+0.4400	.4901	—.2652	+8.6514	.9995
11	B.A.C. 4043	6½	+77	—17	6 8.0	— 8 20 59	+0.5421	.4883	—.2655	+8.3637	9.9999
11	13 Virginis	6	+90	+ 4	17 4.4	+ 2 22 43	+0.9271	.4861	—.2648	+5.9869	0.0000
11	η Virginis	3½	—28	—90	17 46.7	+ 3 3 50	—1.2587	.4863	—.2647	+7.3421	0.0000
12	B.A.C. 4255	6½	+45	—43	4 24.0	—10 35 53	+0.0217	.4849	—.2622	—8.7964	9.9992
12	B.A.C. 4294	6½	+85	0	9 22.7	— 5 45 9	+0.8492	.4844	—.2605	—8.9833	.9980
12	B.A.C. 4394	5½	+76	— 3	21 11.8	+ 5 44 55	+0.7806	.4853	—.2549	—9.1553	.9955
13	58 Virginis	6	+81	+28	2 11.2	+10 36 15	+1.2558	.4853	—.2519	—9.2308	.9936
13	α Virginis	1	+80	0	6 29.8	— 9 11 46	+0.8614	.4865	—.2493	—9.2571	.9928
13	h Virginis	6	—36	—90	10 50.0	— 4 58 58	—1.3035	.4904	—.2465	—9.2144	.9941
13	86 Virginis	6	+15	—76	17 58.0	+ 1 57 21	—0.5154	.4919	—.2403	—9.3074	.9909
14	B.A.C. 4679	6½	+38	—47	4 1.5	+11 44 7	—0.0392	.4944	—.2309	—9.3922	.9864
14	B.A.C. 4700	5½	+74	—10	7 27.1	— 8 56 8	+0.6625	.4944	—.2276	—9.4303	.9836
15	B.A.C. 4923	6	+69	+26	7 39.5	— 9 25 46	+1.1847	.5051	—.1978	—9.5497	.9708
15	B.A.C. 5023	6	+64	—14	17 14.6	— 1 6 2	+0.5778	.5131	—.1830	—9.5711	.9676
16	42 Libræ	5½	+40	—34	4 54.2	+11 9 40	+0.1932	.5228	—.1628	—9.5981	.9629
16	B.A.C. 5197	6	+66	— 1	7 32.4	—10 17 8	+0.7761	.5224	—.1574	—9.6138	.9598
16	A Scorpii	5	+65	+ 7	11 13.9	— 6 42 43	+0.8999	.5242	—.1511	—9.6243	.9576
16	B.A.C. 5253	6	+29	—44	11 23.2	— 6 33 43	+0.0056	.5280	—.1505	—9.6111	.9604
16	B.A.C. 5254	6	— 2	—88	11 25.1	— 6 31 58	—0.6104	.5302	—.1505	—9.6016	.9622
16	B.A.C. 5255	6	+65	+11	11 30.6	— 6 26 34	+0.9528	.5249	—.1505	—9.6230	.9579
16	3 Scorpii	6	+65	— 4	11 43.7	— 6 13 56	+0.7380	.5249	—.1505	—9.6230	.9579
16	B.A.C. 5286	6½	+30	—43	13 35.6	— 4 25 38	+0.0303	.5299	—.1465	—9.6165	.9593
16	B.A.C. 5314	6	+65	+ 4	15 48.3	— 2 17 20	+0.8331	.5275	—.1420	—9.6335	.9556
16	B.A.C. 5347	5	+64	+20	18 0.2	— 0 9 42	+1.0659	.5282	—.1370	—9.6410	.9538
17	σ Scorpii	3½	+ 1	—77	0 3.8	+ 5 41 50	—0.4898	.5385	—.1247	—9.6300	.9564
17	α Scorpii	1½	+26	—44	3 47.1	+ 9 17 33	+0.0087	.5396	—.1163	—9.6436	.9532
17	B.A.C. 5800	6½	—40	—90	23 36.9	+ 4 25 57	—1.0762	.5714	—.0693	—9.6542	.9506
18	43 Ophiuchi	6	+18	—47	3 30.9	+ 8 11 35	—0.0346	.5551	—.0586	—9.6716	.9459
18	3 Sagittarii	5	—22	—90	13 49.1	— 5 52 44	—0.7425	.5644	—.0311	—9.6684	.9469
18	B.A.C. 6063	6½	—12	—84	17 39.7	— 2 10 36	—0.5517	.5652	—.0209	—9.6722	.9458
18	B.A.C. 6072	6½	+25	—34	18 27.2	— 1 24 54	+0.1799	.5123	—.0185	—9.6819	.9429
18	γ^1 Sagittarii	4	+61	+21	21 5.6	+ 1 7 34	+1.0491	.5584	—.0107	—9.6935	.9393
18	B.A.C. 6120	6½	+ 2	—61	21 51.7	+ 1 51 58	—0.2582	.5651	—.0095	—9.6769	.9444
18	B.A.C. 6127	5	+ 7	—54	22 24.0	+ 2 23 6	—0.1575	.5652	—.0073	—9.6782	.9440
19	B.A.C. 6190	6½	+19	—40	2 16.0	+ 6 6 26	+0.0796	.5652	+.0041	—9.6814	.9431
19	B.A.C. 6191	6½	— 1	—64	2 16.2	+ 6 6 39	—0.3127	.5672	+.0039	—9.6763	.9446
19	B.A.C. 6220	6½	+ 9	—52	4 11.0	+ 7 57 8	—0.1229	.5669	+ 0098	—9.6786	.9439
19	τ Sagittarii	3½	+14	—51	22 42.1	+ 1 46 13	—0.1118	.5703	+.0634	—9.6698	.9464
20	B.A.C. 6628	6	+61	— 5	5 52.6	+ 8 40 21	+0.6915	.5666	+.0836	—9.6736	.9454
20	B.A.C. 6666	6	+21	—46	8 6.9	+10 49 35	—0.0223	.5702	+.0908	—9.6611	.9488
20	ϖ Sagittarii	5½	+50	—18	18 48.2	— 2 53 25	+0.4699	.5670	+.1187	—9.6522	.9511
20	A Sagittarii	5	+54	—15	20 6.3	— 1 38 20	+0.5288	.5661	+.1243	—9.6508	.9515
21	17 Capricor.	6	—42	—90	15 53.9	— 6 35 8	—1.2159	0 5683	+.1746	—9.5742	9 9671

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Feb. 21	B.A.C. 7179	6	+41	—33	16 47.8	— 4 43 9	+0.2046	0.5618	+.1770	—9.5965	9 9632
22	χ Capricor.	6	+47	—29	1 24.6	+ 2 34 42	+0.2847	.5587	+.1970	—9.5692	.9679
22	27 Capricor.	6	+19	—61	1 50.3	+ 2 59 28	—0.2846	.5607	+.1981	—9.5569	.9698
22	φ Capricor.	6	+52	—26	4 27.0	+ 5 30 29	+0.3572	.5569	+.2033	—9.5591	.9694
22	33 Capricor.	6	+69	+47	8 7.2	+ 9 2 43	+1.3366	.5523	+.2115	—9.5633	.9688
22	ι Capricor.	4½	+70	+25	13 44.8	— 9 31 50	+1.1768	.5509	+.2228	—9.5363	.9727
22	γ Capricor.	3½	—59	—90	15 5.4	— 8 14 5	—1.3700	.5585	+.2255	—9.4735	.9799
22	κ Capricor.	5	+71	+20	16 10.7	— 7 11 3	+1.1247	.5503	+.2276	—9.5239	.9743
22	δ Capricor.	3	—34	—90	18 7.9	— 5 18 6	—1.2148	.5568	+.2314	—9.4603	.9811
25	20 Piscium	6	+58	—32	1 5.1	— 0 13 19	+0.2530	.5404	+.2912	—8.7928	.9992
25	24 Piscium	6½	+86	—34	3 24.2	+ 2 1 15	+1.3195	.5399	+.2919	—8.8381	.9990
25	B.A.C. 8365	6½	+63	—28	9 1.3	+ 7 27 6	+0.3264	.5363	+.2929	—8.3555	.9999
25	B.A.C. 57	6½	+38	—51	14 56.3	—10 49 41	—0.1249	.5362	+.2929	+8.1920	.9999
25	44 Piscium	6	+87	—13	18 27.3	— 7 25 46	+0.6536	.5138	+.2936	+8.3009	.9999
26	60 Piscium	6	—21	—84	4 36.4	+ 2 23 11	—1.1771	.5366	+.2895	+9.0162	.9977
26	B.A.C. 221	6	+64	—27	5 0.7	+ 2 46 40	+0.3460	.5382	+.2891	+8.8989	.9986
26	B.A.C. 274	6½	+90	— 7	10 19.0	+ 7 54 16	+0.7153	.5394	+.2866	+8.9978	.9978
26	ι Piscium	4	+30	—59	11 44.4	+ 9 16 49	—0.2794	.5389	+.2855	+9.0931	.9966
26	ζ Piscium	6	+90	+51	16 38.7	— 9 58 49	+1.4129	.5425	+.2821	+9.0745	.9969
27	π Piscium	5	+32	—54	3 10.3	+ 0 11 14	—0.2386	.5438	+.2724	+9.2962	.9913
27	Venus		+21	—67	4 18.3	+ 1 16 52	—0.4692	.5082	+.2526	+9.3160	.9905
28	27 Arietis	6	+53	—29	2 43.1	— 1 5 35	+0.1545	.5554	+.2388	+9.4677	.9804
28	B.A.C. 782	6½	+ 4	—70	3 51.3	+ 0 0 10	+0.7565	.5532	+.2372	+9.4958	.9776
28	μ Arietis	5½	—14	—71	7 34.7	+ 3 35 30	—1.0436	5539	+.2302	+9.5213	.9746
28	40 Arietis	6	+90	+41	10 13.4	+ 6 8 27	+1.2771	.5633	+.2251	+9.4826	.9790
28	47 Arietis	6	+31	—48	14 11.7	+ 9 57 56	—0.2605	.5602	+.2170	+9.5360	.9727
28	ι Arietis	4½	— 1	—69	14 40.2	+10 25 28	—0.8347	.5581	+.2164	+9.5497	.9708
28	ζ Arietis	4½	+90	+ 8	21 12.7	— 7 16 37	+0.7889	.5683	+.2018	+9.5446	.9715
28	τ¹ Arietis	5	+90	+36	23 49.1	— 4 46 7	+1.1907	.5711	+.1961	+9.5470	.9712
Mar. 1	66 Arietis	6½	+48	—29	2 45.0	— 1 56 51	+0.0606	.5682	+.1896	+9.5794	.9662
1	7 Tauri	6	+36	—39	5 9.8	+ 0 21 27	—0.1694	.5644	+.1830	+9.6090	.9608
1	9 Tauri	6	+61	—17	6 13.1	+ 1 23 22	+0.2743	.5711	+.1811	+9.5872	.9649
1	*g* Pleiadum	5½	+27	—46	9 22.3	+ 4 25 17	—0.3170	.5704	+.1732	+9.6066	.9613
1	*b* Pleiadum	4½	+39	—35	9 24.3	+ 4 27 15	—0.0981	.5711	+.1730	+9.6035	.9618
1	*m* Pleiadum	7	— 1	—66	9 30.2	+ 4 30 58	—0.8181	.5681	+.1728	+9.6159	.9594
1	ι Tauri	5	+21	—53	9 31.8	+ 4 34 31	—0.4352	.5698	+.1727	+9.6096	.9607
1	1 Pleiadum	8	+46	—29	9 38.0	+ 4 40 25	+0.0173	.5718	+.1726	+9.6022	.9621
1	2 Pleiadum	8½	+22	—51	9 40.7	+ 4 43 4	—0.4085	.5699	+.1725	+9.6096	.9607
1	3 Pleiadum	8½	+44	—31	9 41.7	+ 4 44 0	—0.2109	.5717	+.1724	+9.6030	.9620
1	4 Pleiadum	8	+30	—44	9 42.3	+ 4 44 31	—0.2749	.5706	+.1723	+9.6074	.9611
1	5 Pleiadum	9	+14	—60	9 42.8	+ 4 45 3	—0.5059	.5692	+.1722	+9.6123	.9601
1	6 Pleiadum	9	+33	—41	9 43.8	+ 4 46 3	—0.2231	.5708	+.1721	+9.6066	.9613
1	*c* Pleiadum	5	+29	—45	9 46.7	+ 4 48 49	—0.2930	.5706	+.1720	+9.6080	.9610
1	7 Pleiadum	8	+47	—28	9 48.2	+ 4 50 16	+0.0417	.5720	+.1719	+9.6022	.9621
1	B.A.C. 1155	7	+90	+21	9 48.4	+ 4 50 26	+0.9454	.5760	+.1718	+9.5865	.9650
1	*k* Pleiadum	7½	+19	—55	9 48.7	+ 4 50 43	—0.4788	.5699	+.1718	+9.6111	.9604
1	*l* Pleiadum	7½	+21	—53	9 52.1	+ 4 54 1	—0.4421	.5700	+.1718	+9.6107	.9604
1	9 Pleiadum	8½	+40	—34	9 57.9	+ 4 59 36	—0.0844	.5717	+ 1717	+9.6049	.9616
1	*d* Pleiadum	5	+54	—21	9 59.7	+ 5 2 16	+0 1651	.5728	+.1716	+9.6007	.9624
1	10 Pleiadum	8	+37	—37	10 2.3	+ 5 3 51	—0.1381	.5715	+.1715	+9.6061	.9613
1	11 Pleiadum	8½	+46	—28	10 7.4	+ 5 8 44	+0.0294	.5723	+.1714	+9.6034	.9619
1	12 Pleiadum	7½	+24	—49	10 14.9	+ 5 15 59	—0.3721	.5706	+.1713	+9.6106	.9604
1	13 Pleiadum	8½	+54	—21	10 17.6	+ 5 18 30	+0.1663	.5729	+.1712	+9.6016	.9622
1	14 Pleiadum	9	+70	— 9	10 20.0	+ 5 20 48	+0.4050	.5742	+.1711	+9.5976	9630
1	15 Pleiadum	8½	+47	—27	10 22.4	+ 5 23 10	+0.0449	0 5725	+.1710	+9.6039	9.9618

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Mar. 1	16 Pleiadum	9½	+67	—12	10 22.9	+ 5 23 34	+0.3606	0.5739	+.1709	+9.5985	9.9628
1	17 Pleiadum	8	+74	— 7	10 23.4	+ 5 24 5	+0.4546	.5743	+.1708	+9.5969	.9631
1	18 Pleiadum	8	+47	—28	10 23.5	+ 5 24 11	+0.0367	.5724	+.1707	+9.6041	.9617
1	*p* Pleiadum	7½	+48	—27	10 24.2	+ 5 24 54	+0.0617	.5725	+.1706	+9.6037	.9618
1	19 Pleiadum	8	+82	— 2	10 24.6	+ 5 25 13	+0.5480	.5749	+.1705	+9.5953	.9634
1	20 Pleiadum	8	+22	—51	10 24.8	+ 5 25 26	—0.4147	.5706	+.1705	+9.6118	.9602
1	21 Pleiadum	8½	+18	—55	10 25.8	+ 5 26 24	—0.4812	.5703	+.1705	+9.6130	.9600
1	22 Pleiadum	8	+61	—16	10 25.8	+ 5 26 25	+0.2676	.5736	+.1705	+9.6002	.9625
1	23 Pleiadum	8½	+78	— 4	10 27.1	+ 5 27 40	+0.5131	.5747	+.1703	+9.5960	.9633
1	24 Pleiadum	8	+39	—35	10 27.4	+ 5 27 56	—0.1037	.5719	+.1701	+9.6067	.9612
1	η Tauri	3	+49	—25	10 27.5	+ 5 28 1	+0.0820	.5727	+.1699	+9.6035	.9618
1	25 Pleiadum	8½	+86	0	10 31.2	+ 5 31 33	+0.5935	.5751	+.1697	+9.5948	.9635
1	26 Pleiadum	9	+90	+ 5	10 33.6	+ 5 33 55	+0.6679	.5747	+.1695	+9.5937	.9637
1	27 Pleiadum	8½	+40	—34	10 45.1	+ 5 44 59	—0.0858	.5720	+.1693	+9.6072	.9611
1	28 Pleiadum	7	+90	+14	10 49.6	+ 5 49 16	+0.8337	.5760	+.1691	+9.5916	.9641
1	29 Pleiadum	8	+39	—34	10 51.8	+ 5 51 22	—0.0952	.5721	+.1690	+9.6077	.9611
1	*s* Pleiadum	7½	+72	— 8	11 3.1	+ 6 2 17	+0.4289	.5744	+.1689	+9.5992	.9627
1	*f* Pleiadum	4½	+59	—17	11 8.2	+ 6 7 8	+0.2448	.5736	+.1688	+9.6027	.9620
1	*h* Pleiadum	5½	+54	—21	11 8.6	+ 6 7 33	+0.1616	.5732	+.1687	+9.6042	.9617
1	30 Pleiadum	8½	+71	— 9	11 9.3	+ 6 8 16	+0.4163	.5744	+.1686	+9.5998	.9626
1	31 Pleiadum	8	+39	—34	11 10.5	+ 6 9 24	—0.0963	.5721	+.1685	+9.6086	.9608
1	32 Pleiadum	8	+40	—33	11 12.5	+ 6 11 20	—0.0756	.5724	+.1684	+9.6084	.9609
1	33 Pleiadum	8½	+48	—26	11 14.4	+ 6 13 8	+0.0644	.5731	+.1683	+9.6061	.9613
1	34 Pleiadum	7½	+89	+ 3	11 22.2	+ 6 20 36	+0.6279	.5755	+.1682	+9.5968	.9631
1	35 Pleiadum	9	+50	—25	11 22.5	+ 6 20 58	+0.0803	.5733	+.1679	+9.6057	.9615
1	36 Pleiadum	9	+52	—23	11 26.1	+ 6 24 33	+0.1272	.5733	+.1676	+9.9656	.9615
1	37 Pleiadum	8	+44	—30	11 26.6	+ 6 24 52	—0.0053	.5728	+.1673	+9.6078	.9610
1	38 Pleiadum	8	+78	— 4	11 27.9	+ 6 26 6	+0.5044	.5751	+.1670	+9.5992	.9627
1	B.A.C. 1192	6½	—36	—65	11 34.0	+ 6 31 57	—1.2328	.5674	+.1668	+9.6283	.9567
1	39 Pleiadum	8	+38	—35	11 41.7	+ 6 39 29	—0.1123	.5725	+.1667	+9.6103	.9605
1	40 Pleiadum	7½	+73	— 7	11 49.6	+ 6 46 58	+0.4487	.5752	+.1666	+9.6013	.9623
1	36 Tauri	6½	+90	+36	17 13.8	+11 58 37	+1.1265	.5809	+.1523	+9.6044	.9617
1	*p* Tauri	6	— 9	—64	18 45.3	—10 35 47	—0.9294	.5723	+.1461	+9.6435	.9533
2	χ Tauri	5½	+82	+ 2	0 25.5	— 5 6 36	+0.5512	.5814	+.1323	+9.6306	.9563
2	B.A.C. 1648	6½	+59	— 8	23 9.6	— 7 16 54	+0.2329	.5859	+.0645	+9.6686	.9467
3	β Tauri	2	+26	—37	1 11.6	— 5 19 50	—0.3361	.5829	+.0577	+9.6784	.9440
3	B.A.C. 1709	6½	— 6	—61	2 29.2	— 4 5 21	—0.8664	.5800	+.0543	+9.6866	.9415
3	B.A.C. 1746	6½	+90	+24	4 57.0	— 1 43 28	+0.8048	.5891	+.0481	+9.6654	.9477
3	B.A.C. 1772	6	+ 1	—61	6 12.9	— 0 30 39	—0.7508	.5810	+.0395	+9.6874	.9413
3	136 Tauri	5	+90	+41	11 41.4	+ 4 44 35	+1.0400	.5903	+.0258	+9.6655	.9476
3	B.A.C. 1882	6½	+26	—33	12 54.4	+ 5 54 45	—0.3169	.5828	+.0198	+9.6844	.9422
3	κ Aurigæ	4	— 9	—61	20 12.7	—11 4 33	—0.9010	.5786	—.0009	+9.6930	.9395
4	B.A.C. 2097	6½	+65	+ 1	2 6.3	— 5 25 6	+0.3254	.5833	—.0202	+9.6760	.9447
4	49 Aurigæ	6½	+76	+ 7	4 0.5	— 3 35 24	+0.4611	.5836	—.0266	+9.6735	.9454
4	53 Aurigæ	5½	+11	—51	5 14.1	— 2 24 45	—0.5844	.5776	—.0295	+9.6870	.9414
4	54 Aurigæ	6	+55	— 9	5 42.9	— 1 57 4	+0.1468	.5757	—.0307	+9.6909	.9402
4	28 Geminor.	6	+ 6	—58	7 45.1	+ 0 0 16	—0.6793	.5768	—.0356	+9.6871	.9414
4	47 Geminor.	6	+90	+25	18 26.0	+10 16 8	+0.8626	.5792	—.0692	+9.6584	.9496
4	53 Geminor.	6	+24	—41	20 14.9	—11 59 9	—0.3706	.5719	—.0744	+9.6736	.9453
4	59 Geminor.	6½	+22	—43	23 44.9	— 8 37 17	—0.4059	.5698	—.0839	+9.6703	.9463
5	ι Geminor.	4	+ 9	—57	0 13.8	— 8 9 14	—0.6233	.5682	—.0859	+9.6728	.9456
5	b^1 Geminor.	5½	—24	—62	1 41.5	— 6 45 4	—1.0973	.5648	—.0886	+9.6774	.9442
5	b^2 Geminor.	5½	— 9	—62	1 53.6	— 6 33 30	—0.9053	.5656	—.0904	+9.6746	.9451
5	B.A C. 2742	6	—11	—62	2 14.4	— 6 13 28	—0.9387	.5656	—.0910	+9.6746	.9451
5	υ Geminor.	5	+39	—28	4 24.8	— 4 8 3	—0.0963	0.5681	—.0971	+9.6602	9.9490

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Mar. 5	c Geminor.	6	+90	+13	7 50.9	— 0 49 39	+0.7005	0.5698	—.1066	+9.6438	9 9532
5	φ Geminor.	5	— 1	—63	11 44.6	+ 2 55 22	—0.7989	.5602	—.1171	+9.6590	.9494
5	ω¹ Cancri	6	+59	—13	14 54.7	+ 5 58 15	+0.2429	.5624	—.1254	+9.6385	.9545
5	ω² Cancri	6½	+80	+ 1	15 15.6	+ 6 18 34	+0.5177	.5634	—.1257	+9.6337	.9555
5	ψ¹ Cancri	6½	0	—64	18 51.4	+ 9 46 28	—0.7768	.5554	—.1344	+9.6459	.9527
6	ψ² Cancri	4	+20	—51	18 58.2	+ 9 53 1	—0.4498	.5562	—.1350	+9.6409	.9539
6	λ Cancri	6	+77	— 3	23 21.0	— 9 53 41	+0.4910	.5571	—.1449	+9.6172	.9591
6	υ¹ Cancri	7	+19	—53	2 0.5	— 7 19 53	—0.4642	.5503	—.1512	+9.6259	.9573
6	υ² Cancri	6½	+34	—38	2 52.2	— 6 29 58	—0.1881	.5511	—.1530	+9.6197	.9586
6	B.A.C. 2840	7	+19	—54	3 19.8	— 6 3 24	—0.4717	.5494	—.1546	+9.6230	.9579
6	υ³ Cancri	6	+27	—46	4 8.8	— 5 6 3	—0.3260	.5499	—.1561	+9.6187	.9588
7	ξ Cancri	5	—35	—69	21 17.2	+11 17 5	—1.2469	.5331	—.1900	+9.5851	.9652
7	79 Cancri	6	—40	—69	21 44.9	+11 43 50	—1.2850	.5322	—.1912	+9.5842	.9654
7	B.A.C. 3138	6	— 1	—69	23 17.3	—10 46 50	—0.8312	.5331	—.1937	+9.5712	.9676
8	37 Leonis	6	+70	—18	6 13.9	— 4 48 40	+0.4200	.5135	—.2371	+9.3968	.9861
8	l Leonis	5	+16	—61	23 14.9	+11 42 21	—0.3574	.5024	—.2525	+9.2921	.9919
9	χ Leonis	5	+90	+ 7	7 45.3	— 4 1 45	+0.9417	.4990	—.2581	+9.1492	.9956
9	B.A.C. 3837	6½	—16	—81	12 36.6	+ 0 41 24	—1.1156	.4944	—.2606	+9.1866	.9948
9	σ Leonis	4	+49	—40	16 31.3	+ 4 29 32	+0.0753	.4948	—.2621	+9.0740	.9969
9	89 Leonis	6	+90	+42	23 50.3	+11 36 36	+1.3804	.4926	—.2647	+8.8272	.9990
10	β Virginis	3½	+67	—25	8 51.2	— 3 37 19	+0.3935	.4893	—.2663	+8.6512	.9996
10	B.A.C. 4043	6½	+74	—20	13 36.6	+ 1 0 34	+0.4900	.4880	—.2666	+8.3635	9.9999
11	13 Virginis	6	— 9	—90	0 39.6	+11 45 31	—1.0086	.4869	—.2665	+5.9160	0.0000
11	η Virginis	3½	—34	—90	1 21.9	—11 33 18	—1.3299	.4866	—.2665	+7.3393	0.0000
11	B.A.C. 4255	6½	+41	—48	11 59.5	— 1 12 44	—0.0580	.4860	—.2639	—8.7965	9.9992
11	B.A.C. 4294	6½	+79	— 5	16 58.1	+ 3 37 53	+0.7658	.4856	—.2619	—8.9833	.9980
12	B.A.C. 4394	5½	+82	—10	4 46.2	— 8 52 56	+0.6849	.4865	—.2565	—9.1553	.9955
12	58 Virginis	6	+80	+19	9 45.2	— 4 2 3	+1.1564	.4869	—.2536	—9.2308	.9936
12	α Virginis	1	+77	— 6	14 3.3	+ 0 9 6	+0.7590	.4881	—.2510	—9.2572	.9928
12	h Virginis	6	—53	—90	18 23.0	+ 4 21 44	—1.4126	.4917	—.2486	—9.2144	.9941
13	86 Virginis	6	+ 9	—85	1 30.2	+11 17 13	—0.6285	.4935	—.2418	—9.3075	.9909
13	B.A.C. 4679	6½	+32	—53	11 32.7	— 2 57 2	—0.1563	.4969	—.2349	—9.3922	.9864
13	B.A.C. 4700	5½	+68	—17	14 57.4	+ 0 21 54	+0.5464	.4958	—.2287	—9.4304	.9836
14	B.A C. 4923	6	+69	+16	15 10.8	+ 0 23 10	+1.0622	.5060	—.1981	—9.5497	.9708
15	B.A.C. 5023	6	+57	—20	0 47.6	+ 9 12 37	+0.4525	.5134	—.1829	—9.5712	.9676
15	42 Libræ	5½	+24	—52	12 30.6	— 3 26 10	—0.1179	.5218	—.1623	—9.5981	.9629
15	B.A.C. 5197	6	+64	— 9	15 10.0	— 0 51 42	+0.6529	.5210	—.1579	—9.6138	.9598
15	A Scorpii	5	+65	— 1	18 53.1	+ 2 44 6	+0.7781	.5228	—.1504	—9.6243	.9576
15	B.A.C. 5253	6	+23	—52	19 2.5	+ 2 53 16	—0.1213	.5262	—.1499	—9.6111	.9604
15	B.A.C. 5254	6	— 9	—90	19 4.4	+ 3 32 45	—0.7407	.5284	—.1498	—9.6016	.9622
15	B.A.C. 5255	6	+65	+ 2	19 9.9	+ 3 0 27	+0.8308	.5225	—.1497	—9.6257	.9573
15	3 Scorpii	6	+63	—10	19 23.1	+ 3 13 12	+0.6172	.5276	—.1496	—9.6063	.9613
15	B.A.C. 5286	6½	+24	—50	21 15.8	+ 6 2 15	—0.0960	.5280	—.1457	—9.6165	.9593
15	π Scorpii	3½	+65	+48	21 21.2	+ 5 7 20	+1.2974	.5225	—.1457	—9.6371	.9548
15	B.A.C. 5314	6	+65	— 4	23 9.6	+ 6 51 42	+0.7313	.5262	—.1411	—9.6335	.9556
16	B.A.C. 5347	5	+64	+10	1 43.0	+ 9 20 46	+0.9467	.5267	—.1367	—9.6410	.9538
16	σ Scorpii	3½	— 5	—89	7 50.1	— 8 44 10	—0.6172	.5364	—.1240	— 9.6300	.9564
16	α Scorpii	1½	+19	—52	11 35.5	— 5 6 16	—0.1156	.5364	—.1162	—9.6436	.9532
17	B.A.C. 5800	6½	—50	—90	7 42.6	— 9 40 36	—1.2034	.5532	—.0686	—9.6542	.9506
17	43 Ophiuchi	6	+12	—54	11 39.6	— 5 51 56	—0.1519	.5503	—.0588	—9.6716	.9459
17	3 Sagittarii	5	—28	—90	22 10.3	+ 4 16 17	—0.8616	.5586	—.0302	—9.6684	.9469
18	B.A.C. 6063	6½	0	—64	2 5.5	+ 8 2 55	—0.3069	.5574	—.0196	—9.6769	.9444
18	B.A.C. 6072	6½	+19	—41	2 53.9	+ 8 49 37	+0.0703	.5558	—.0169	—9.6819	.9429
18	γ¹ Sagittarii	4	+61	+13	5 35.6	+11 25 29	+0.9502	.5523	—.0108	—9.6935	.9393
18	B.A.C. 6120	6½	+ 2	—61	6 22.5	—11 49 21	—0.2616	0.5585	—.0084	—9.6783	9.9440

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			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Mar. 18	B.A.C. 6127	5	+ 1	—61	6 55.8	—11 17 20	—0.2678	0.5594	—.0069	—9.6782	9.9440
18	B.A.C. 6190	6½	+13	—47	10 52.7	— 7 29 4	—0.0292	.5586	+.0042	—9.6814	.9431
18	B.A.C. 6191	6½	— 7	—72	10 52.9	— 7 28 51	—0.4239	.5608	+.0042	—9.6761	.9447
18	δ Sagittarii	3½	+60	+53	12 21.9	— 6 3 4	+1.2653	.5529	+.0084	—9.6974	.9380
18	B.A.C. 6220	6½	+ 3	—59	12 50.2	— 5 35 54	—0.2315	.5603	+.0090	—9.6783	.9440
19	τ Sagittarii	3	+ 9	—58	7 46.9	—11 21 5	—0.2093	.5629	+.0629	—9.6698	.9464
19	B.A.C. 6628	6	+56	—11	15 8.8	— 4 15 37	+0.6052	.5582	+.0834	—9.6736	.9454
19	B.A.C. 6666	6	+16	—51	17 25.2	— 2 4 15	—0.1140	.5626	+.0890	—9.6611	.9488
20	ω Sagittarii	5½	+46	—23	4 21.8	+ 8 28 5	+0.3909	.5590	+.1188	—9.6522	.9511
20	A Sagittarii	5	+49	—20	5 41.6	+ 9 45 1	+0.4497	.5586	+.1217	—9.6507	.9515
20	B.A.C. 7077	6	+65	+42	20 8.5	— 0 19 49	+1.2729	.5523	+.1599	—9.6328	.9557
21	17 Capricor.	6	—51	—90	1 55.5	+ 5 14 34	—1.2954	.5612	+.1737	—9.5742	.9671
21	B.A.C. 7197	6	+38	—37	2 50.5	+ 6 7 37	+0.1369	.5554	+.1753	—9.5964	.9632
21	χ Capricor.	6	+44	—33	11 37.3	— 9 24 34	+0.2236	.5527	+.1955	—9.5692	.9679
21	27 Capricor.	6	+15	—66	12 3.4	— 8 59 20	—0.3488	.5545	+.1969	—9.5569	.9698
21	φ Capricor.	6	+49	—29	14 42.9	— 6 25 32	+0.2990	.5513	+.2019	—9.5591	.9694
21	33 Capricor.	6	+69	+38	18 26.8	— 2 49 36	+1.2867	.5465	+.2105	—9.5632	.9688
22	ι Capricor.	4½	+70	+21	0 9.5	+ 2 41 0	+1.1303	.5456	+.2220	—9.5362	.9727
22	κ Capricor.	5	+71	+18	2 37.5	+ 5 3 52	+1.0792	.5514	+.2287	—9.5239	.9743
22	δ Capricor.	3	—39	—90	4 36.2	+ 6 58 23	—1.2682	.5517	+.2301	—9.4603	.9811
22	29 Aquarii	6	+73	+30	11 8.4	—10 43 42	+1.2460	.5424	+.2421	—9.4817	.9791
22	42 Aquarii	6	—40	—90	17 58.5	— 4 7 9	—1.3080	.5482	+.2529	—9.3596	.9883
22	45 Aquarii	6	+10	—81	18 57.7	— 3 9 55	—0.5781	.5457	+.2544	—9.3843	.9869
22	50 Aquarii	6	+55	—30	21 24.9	— 0 47 47	+0.2866	.5430	+.2575	—9.3913	.9864
22	B.A.C. 7835	6½	+58	—28	23 56.1	+ 1 38 15	+0.3268	.5424	+.2615	—9.3729	.9876
23	70 Aquarii	6	+54	—33	8 21.9	+ 9 46 49	+0.2249	.5410	+.2717	—9.2926	.9915
23	h^1 Aquarii	6	+17	—76	15 59.4	— 6 51 8	—0.5180	.5410	+.2798	—9.1679	.9952
23	h^2 Aquarii	7	+21	—70	16 3.9	— 6 46 46	—0.4367	.5409	+.2801	—9.1710	.9952
23	h^3 Aquarii	7	+34	—55	16 19.4	— 6 31 52	—0.1819	.5404	+.2803	—9.1802	.9950
23	h^4 Aquarii	7½	+30	—59	16 55.9	— 5 56 34	—0.2548	.5404	+.2808	—9.1676	.9952
23	φ Aquarii	5	— 8	—90	20 12.0	— 2 47 2	—0.9710	.5408	+.2836	—9.0747	.9969
23	χ Aquarii	5½	+72	+11	21 21.2	— 1 40 14	+1.0366	.5383	+.2843	—9.1700	.9952
23	96 Aquarii	5½	—24	—90	22 31.2	— 0 32 33	—1.2037	.5408	+.2858	—9.0125	.9977
26	π Piscium	5	+34	—52	12 38.3	+11 27 12	—0.2007	.5525	+.2773	+9.2962	.9913
27	27 Arietis	6	+56	—27	11 25.0	+ 9 24 10	+0.1953	.5663	+.2437	+9.4677	.9804
27	B.A.C. 782	6½	+ 8	—72	12 30.8	+10 27 33	—0.7002	.5635	+.2419	+9.4958	.9776
27	μ Arietis	5½	—10	—71	16 6.5	—10 4 51	—0.9818	.5650	+.2348	+9.5213	.9746
27	40 Arietis	6	+90	+45	18 39.7	— 7 37 29	+1.3026	.5740	+.2294	+9.4826	.9790
27	47 Arietis	6	+34	—45	22 29.5	— 3 56 23	—0.2089	.5711	+.2214	+9.5360	.9727
27	ι Arietis	4½	+ 3	—65	22 57.1	— 3 29 53	—0.7736	.5692	+.2209	+9.5497	.9708
28	ζ Arietis	4½	+90	+10	5 15.7	+ 2 34 9	+0.8244	.5788	+.2061	+9.5446	.9715
28	τ^1 Arietis	5	+90	+39	7 46.6	+ 4 59 7	+1.2207	.5823	+.2001	+9.5469	.9712
28	66 Arietis	6½	+51	—26	10 36.3	+ 7 42 12	+0.1102	.5792	+.1931	+9.5794	.9662
28	7 Tauri	6	—32	—66	12 56.1	+ 9 56 29	—1.1110	.5752	+.1867	+9.6090	.9608
28	9 Tauri	6	+64	—15	13 57.2	+10 55 11	+0.3183	.5820	+.1840	+9.5872	.9649
28	*g* Pleiadum	5½	+32	—42	16 59.8	—10 9 29	—0.2285	.5812	+.1760	+9.6066	.9613
28	*b* Pleiadum	4½	+42	—32	17 1.8	—10 7 36	—0.0479	.5819	+.1760	+9.6035	.9618
28	*m* Pleiadum	7	+ 3	—64	17 7.5	—10 2 6	—0.7548	.5788	+.1759	+9.6159	.9594
28	ι Tauri	5	+24	—50	17 9.1	—10 0 34	—0.3787	.5807	+.1758	+9.6096	.9607
28	1 Pleiadum	8	+49	—26	17 14.9	— 9 54 55	+0.0671	.5760	+.1757	+9.6022	.9621
28	2 Pleiadum	8½	+26	—48	17 17.6	— 9 52 22	—0.3520	.5808	+.1756	+9.6096	.9607
28	3 Pleiadum	8½	+46	—28	17 18.6	— 9 51 27	+0.0292	.5827	+.1755	+9.6030	.9620
28	4 Pleiadum	8	+32	—42	17 19.1	— 9 50 57	—0.2208	.5816	+.1755	+9.6074	.9611
28	5 Pleiadum	9	+17	—57	17 19.6	— 9 50 28	—0.5103	.5802	+.1755	+9.6123	.9601
28	6 Pleiadum	9	+35	—38	17 20.6	— 9 49 33	—0.1702	0.5819	+.1755	+9.6066	9.9613

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			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Mar. 28	*c* Pleiadum	5	+32	—42	17 23.6	— 9 46 37	—0.2396	0.5816	+.1754	+9.6080	9.9610
28	7 Pleiadum	8	+50	—25	17 24.8	— 9 45 26	+0.0855	.5831	+.1753	+9.6022	.9621
28	B.A.C. 1155	7	+90	+23	17 25.0	— 9 45 17	+0.9800	.5871	+.1752	+9.5865	.9650
28	*k* Pleiadum	7½	+22	—52	17 25.3	— 9 44 59	—0.4211	.5809	+.1751	+9.6111	.9604
28	*l* Pleiadum	7½	+24	—50	17 28.6	— 9 41 59	—0.3852	.5809	+.1750	+9.6106	.9604
28	9 Pleiadum	8½	+43	—31	17 34.2	— 9 36 27	—0.0329	.5825	+.1749	+9.6049	.9616
28	*d* Pleiadum	5	+57	—19	17 35.9	— 9 34 48	+0.2125	.5836	+.1748	+9.6007	.9624
28	10 Pleiadum	8	+40	—34	17 38.5	— 9 32 19	—0.0861	.5822	+.1747	+9.6061	.9613
28	11 Pleiadum	8½	+49	—26	17 43.4	— 9 28 37	+0.0789	.5831	+.1746	+9.6034	.9619
28	12 Pleiadum	7½	+28	—46	17 50.7	— 9 20 37	—0.3160	.5811	+.1745	+9.6106	.9604
28	13 Pleiadum	8½	+57	—19	17 53.2	— 9 18 11	+0.2139	.5835	+.1744	+9.6018	.9622
28	14 Pleiadum	9	+73	— 7	17 55.5	— 9 15 58	+0.4489	.5845	+.1743	+9.5976	.9630
28	15 Pleiadum	8½	+50	—25	17 57.9	— 9 13 42	+0.0946	.5831	+.1743	+9.6039	.9618
28	16 Pleiadum	9½	+70	— 9	17 58.3	— 9 13 18	+0.4029	.5844	+.1743	+9.5985	.9628
28	17 Pleiadum	8	+77	— 5	17 58.8	— 9 12 47	+0.4981	.5848	+.1741	+9.5969	.9631
28	18 Pleiadum	8	+50	—25	17 58.9	— 9 12 41	+0.0868	.5830	+.1739	+9 6041	.9617
28	*p* Pleiadum	7½	+51	—24	17 59.6	— 9 12 2	+0.1115	.5831	+.1737	+9.6037	.9618
28	19 Pleiadum	8	+85	0	17 59.9	— 9 11 42	+0.5901	.5852	+.1735	+9.5953	.9634
28	20 Pleiadum	8	+90	+ 3	18 0.2	— 9 11 29	+0.6386	.5854	+.1733	+9 5945	.9635
28	21 Pleiadum	8½	+22	—52	18 1.1	— 9 10 35	—0.4229	.5806	+.1731	+9.6129	.9600
28	22 Pleiadum	8	+64	—14	18 1.2	— 9 10 34	+0.3137	5840	+.1730	+9.6002	.9625
28	23 Pleiadum	8½	+82	— 2	18 2.4	— 9 9 21	+0.5553	.5852	+.1729	+9 5960	.9633
28	24 Pleiadum	8	+42	—32	18 2.7	— 9 9 6	—0.0515	.5824	+.1728	+9.6067	.9612
28	*η* Tauri	3	+52	—23	18 2.8	— 9 9 1	+0.1313	.5832	+.1727	+9.6035	.9618
28	25 Pleiadum	8½	+90	+ 3	18 6.3	— 9 5 38	+0.6344	.5856	+.1726	+9.5948	.9635
28	26 Pleiadum	9	+90	+ 7	18 8.7	— 9 3 21	+0.7077	.5860	+.1725	+9 5937	.9637
28	27 Pleiadum	8½	+43	—31	18 19.9	— 8 52 34	—0.0337	.5828	+.1724	+9.6072	.9611
28	28 Pleiadum	7	+90	+16	18 23.8	— 8 48 50	+0.8702	.5870	+.1723	+9.5916	.9641
28	29 Pleiadum	8	+42	—32	18 26.2	— 8 46 31	—0.0438	.5831	+.1722	+9.6077	.9611
28	*s* Pleiadum	7½	+75	— 6	18 37.2	— 8 35 57	+0.4724	.5850	+.1722	+9.5992	.9627
28	*f* Pleiadum	4½	+62	—15	18 42.1	— 8 31 18	+0.2910	.5844	+.1722	+9.6027	.9620
28	*h* Pleiadum	5½	+57	—19	18 42.5	— 8 30 52	+0.2093	.5840	+.1720	+9.6042	.9617
28	30 Pleiadum	8½	+74	— 6	18 43.2	— 8 30 11	+0.4600	.5852	+.1718	+9.5998	.9626
28	31 Pleiadum	8	+42	—32	18 44.4	— 8 29 5	—0.0464	.5830	+.1716	+9.6086	.9609
28	32 Pleiadum	8	+43	—31	18 46.3	— 8 27 12	—0.0240	.5831	+.1714	+9.6084	.9609
28	33 Pleiadum	8½	+51	—24	18 48.1	— 8 25 28	+0.1139	.5836	+.1712	+9.6061	.9613
28	34 Pleiadum	7½	+90	+ 5	18 55.6	— 8 18 16	+0.6682	.5862	+.1710	+9.5968	.9631
28	35 Pleiadum	9	+53	—22	18 56.0	— 8 17 55	+0.1394	.5839	+.1708	+9.6060	.9614
28	36 Pleiadum	9	+55	—20	18 59.4	— 8 14 39	+0.1756	.5842	+.1706	+9.6056	.9615
28	37 Pleiadum	8	+47	—27	18 59.9	— 8 14 10	+0.0453	.5836	+.1704	+9.6075	.9611
28	38 Pleiadum	8	+81	— 2	19 1.1	— 8 13 0	+0.5469	.5858	+.1703	+9.5992	.9627
28	B.A.C. 1192	6½	—25	—65	19 7.0	— 8 7 22	—1.1363	.5779	+.1702	+9.6283	.9567
28	39 Pleiadum	8	+41	—33	19 11.9	— 8 2 39	—0.0675	.5831	+.1701	+9.6103	.9605
28	40 Pleiadum	7½	+77	— 4	19 22.1	— 7 52 52	+0.4915	.5856	+.1700	+9.6012	.9623
29	36 Tauri	6½	+90	+37	0 35.3	— 2 52 13	+1.1596	.5912	+.1554	+9.6044	.9617
29	*p* Tauri	6	— 5	—64	3 1.8	— 0 31 40	—0.8638	.5825	+.1487	+9.6435	.9533
29	*φ* Tauri	5	—40	—63	6 39.4	+ 2 57 6	—1.2494	.5815	+.1381	+9.6571	.9499
29	*χ* Tauri	5½	+87	+ 4	7 32.8	+ 3 48 22	+0.5939	.5916	+.1348	+9.6306	.9563
30	B.A.C. 1648	6½	+62	— 5	5 36.8	+ 0 57 52	+0.2802	.5941	+.0654	+9.6689	.9467
30	*β* Tauri	2	+29	—34	7 35.7	+ 2 51 48	—0.2818	.5909	+.0595	+9.6784	.9440
30	B.A.C. 1709	6½	— 2	—61	8 51.3	+ 4 4 17	—0.8049	.5878	+.0548	+9.6865	.9415
30	B.A.C. 1746	6½	+90	+26	11 15.5	+ 6 22 30	+0.8445	.5967	+.0466	+9.6654	.9477
30	B.A.C. 1772	6	+ 5	—59	12 29.5	+ 7 33 27	—0.6912	.5883	+.0430	+9.6874	.9413
30	136 Tauri	5	+90	+43	17 50.5	—11 18 50	+1.0772	.5967	+.0255	+9.6655	.9476
30	B.A.C. 1882	6½	+30	—30	19 1.9	—10 10 22	—0.2644	0.5893	+.0219	+9.6844	9.9422

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Mar. 31	ϰ Aurigæ	4	− 5	−61	2 11.1	− 3 18 48	−0.8440	0.5877	−.0014	+9.6930	9.9395
31	B.A.C. 2097	6½	+69	+ 3	7 58.3	+ 2 13 19	+0.3699	.5882	−.0203	+9.6760	.9447
31	49 Aurigæ	6½	+79	+ 9	9 50.8	+ 4 2 14	+0.5044	.5881	−.0258	+9.6735	.9454
31	53 Aurigæ	6½	+14	−47	11 3.1	+ 5 11 39	−0.5323	.5817	−.0298	+9.6870	.9414
31	54 Aurigæ	6	+56	− 7	11 31.4	+ 5 38 50	+0.1924	.5855	−.0315	+9.6771	.9444
31	28 Geminor.	6	+ 9	−54	13 31.8	+ 7 34 20	−0.6271	.5800	−.0382	+9.6871	.9413
April 1	47 Geminor.	6	+90	+28	0 4.4	− 6 18 7	+0.9016	.5815	−.0693	+9.6584	.9496
1	53 Geminor.	6	+26	−38	1 52.2	− 4 34 33	−0.3239	.5738	−.0572	+9.6736	.9453
1	59 Geminor.	6½	+24	−41	5 20.8	− 1 14 1	−0.3602	.5715	−.0846	+9.6703	.9463
1	ι Geminor.	4	+12	−54	5 48.9	− 0 47 3	−0.5760	.5703	−.0863	+9.6728	.9456
1	b^1 Geminor.	5½	−20	−62	7 15.8	+ 0 36 31	−1.0474	.5667	−.0899	+9.6776	.9442
1	b^2 Geminor.	5½	− 4	−62	7 27.7	+ 0 48 0	−0.8380	.5676	−.0910	+9.6746	.9451
1	B.A.C. 2472	6	− 7	−62	7 48.4	+ 1 7 52	−0.8901	.5672	−.0928	+9.6746	.9451
1	υ Geminor.	5	+42	−25	9 58.8	+ 3 13 18	−0.0531	.5692	−.0972	+9.6602	.9490
1	c Geminor.	6	+90	+15	13 22.6	+ 6 29 23	+0.7385	.5703	−.1076	+9.6438	.9532
1	φ Geminor.	5	+ 2	−63	17 15.0	+10 13 6	−0.7544	.5603	−.1166	+9.6590	.9494
1	ω^1 Cancri	6	+61	−12	20 24.3	−10 44 39	+0.2821	.5623	−.1255	+9.6385	.9545
1	ω^2 Cancri	6½	+83	+ 3	20 45.2	−10 24 33	+0.5563	.5633	−.1264	+9.6337	.9555
2	ψ^1 Cancri	6½	+ 3	−64	0 20.4	− 6 57 14	−0.7344	.5544	−.1340	+9.6460	.9527
2	ψ^2 Cancri	4	+22	−48	0 27.1	− 6 50 44	−0.4090	.5557	−.1355	+9.6409	.9539
2	λ Cancri	6	+80	− 1	4 49.4	− 2 37 53	+0.5284	.5563	−.1455	+9.6172	.9591
2	υ^1 Cancri	7	+21	−51	7 28.9	− 0 4 6	−0.4254	.5497	−.1515	+9.6259	.9573
2	υ^2 Cancri	6½	+36	−36	8 20.7	+ 0 45 50	−0.1506	.5500	−.1530	+9.6197	.9586
2	B.A.C. 2840	7	+29	−43	7 48.3	+ 0 12 19	−0.2806	.5501	−.1492	+9.6230	.9579
2	υ^3 Cancri	6	+29	−44	9 37.4	+ 1 59 51	−0.2947	.5481	−.1558	+9.6188	.9588
3	ξ Cancri	5	−33	−68	2 48.8	− 5 23 58	−1.2153	.5303	−.1719	+9.5851	.9652
3	79 Cancri	6	−37	−68	3 16.7	− 4 57 2	−1.2456	.5298	−.1723	+9.5842	.9654
3	B.A.C. 3138	6	− 1	−68	4 49.6	− 3 27 13	−0.8001	.5303	−.1753	+9.5712	.9676
4	37 Leonis	6	+71	−17	12 1.5	+ 2 46 17	+0.4448	.5096	−.2359	+9.3967	.9861
5	l Leonis	5	+27	−60	5 13.3	− 4 31 52	−0.3390	.4982	−.2508	+9.2920	.9915
5	χ Leonis	5	+90	+ 8	13 49.1	+ 3 49 29	+0.9634	.4962	−.2561	+9.1492	.9956
5	B.A.C. 3837	6½	−15	−81	18 43.5	+ 8 35 40	−1.1031	.4911	−.2584	+9.1866	.9948
5	σ Leonis	4	+50	−39	22 40.5	−11 33 49	+0.0915	.4912	−.2606	+9.0740	.9969
6	89 Leonis	6	+90	+45	6 3.8	− 4 22 37	+1.3996	.4897	−.2626	+8.8271	.9990
6	β Virginis	3½	+68	−24	15 9.5	+ 4 28 27	+0.4082	.4869	−.2650	+8.6511	.9996
6	B.A.C. 4043	6½	+75	−19	19 57.1	+ 9 8 18	+0.5052	.4859	−.2653	+8.3635	9.9999
7	13 Virginis	6	− 8	−90	7 5.1	− 4 1 27	−1.0002	.4849	−.2653	+5.9031	0.0000
7	η Virginis	3½	−34	−90	7 47.7	− 3 19 59	−1.3216	.4847	−.2649	+7.3383	0.0000
7	B.A.C. 4255	6½	+42	−47	18 29.0	+ 7 4 16	−0.0482	.4851	−.2632	−8.7966	9.9992
7	B.A.C. 4294	6½	+78	− 5	23 28.9	+11 55 16	+0.7774	.4848	−.2618	−8.9833	.9980
8	B.A.C. 4394	5½	+82	− 9	11 19.6	− 0 32 6	+0.6973	.4863	−.2564	−9.1553	.9955
8	58 Virginis	6	+80	+21	16 19.2	+ 4 19 26	+1.1695	.4867	−.2535	−9.2309	.9936
8	α Virginis	1	+75	− 5	20 37.8	+ 8 31 4	+0.7720	.4885	−.2512	−9.2573	.9928
9	h Virginis	6	−51	−90	0 57.8	−11 15 58	−1.4040	.4926	−.2479	−9.2145	.9941
9	86 Virginis	6	+10	−85	8 5.3	− 4 20 11	−0.6176	.4939	−.2425	−9.3075	.9909
9	B.A.C. 4679	6½	+32	−53	18 7.7	+ 5 25 27	−0.1442	.4972	−.2334	−9.3923	.9864
9	B.A.C. 4700	5½	+69	−15	21 32.3	+ 8 44 20	+0.5610	.4977	−.2287	−9.4304	.9836
10	B.A C. 4923	6	+69	+18	21 44.2	+ 8 14 8	+1 0819	.5079	−.1979	−9.5497	.9708
11	B.A.C. 5023	6	+58	−19	7 20.7	− 6 26 50	+0.4729	.5146	−.1833	−9.5712	.9676
11	42 Libræ	4½	+35	−40	19 3.7	+ 4 54 23	+0.0882	.5229	−.1627	−9.5982	.9629
11	B.A.C. 5197	6	+65	− 7	21 43.2	+ 7 28 49	+0.6769	.5224	−.1578	−9.6138	.9598
12	A Scorpii	5	+65	0	1 26.5	+11 5 4	+0.8038	.5241	−.1503	−9.6243	.9576
12	B.A.C. 5253	6	+24	−50	1 35.9	+11 14 11	−0.0993	.5275	−.1500	−9.6111	.9604
12	B.A.C. 5254	6	− 8	−90	1 37.9	+11 16 3	−0.7207	.5298	−.1496	−9.6016	.9622
12	B.A.C. 5255	6	+65	+ 4	1 43.4	+11 21 24	+0.8559	0 5241	−.1493	−9.6257	9.9573

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			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Apr. 12	3 Scorpii	3	+63	— 9	1 56.6	+11 34 13	+0.6415	0.5249	—.1497	—9.6231	9.9579
12	B.A.C. 5286	6½	+25	—49	3 51.5	—10 34 33	—0.0736	.5240	—.1459	—9.6165	.9593
12	B.A.C. 5314	6	+65	— 2	6 3.5	— 8 26 52	+0.7572	.5268	—.1416	—9.6335	.9556
12	B.A.C. 5347	5	+64	+12	8 17.3	— 6 17 28	+0.9748	.5269	—.1369	—9.6410	.9538
12	σ Scorpii	3½	— 4	—87	14 25.5	— 0 21 17	—0.5947	.5371	—.1233	—9.6300	.9564
12	α Scorpii	1½	+21	—50	18 12.2	+ 3 17 51	—0.0897	.5368	—.1158	—9.6437	.9532
13	B.A.C. 5800	6½	—48	—90	14 26.2	— 1 9 29	—1.1795	.5517	—.0672	—9.6542	.9506
13	43 Ophiuchi	6	+13	—52	18 26.8	+ 2 42 45	—0.1218	.5488	—.0574	—9.6716	.9459
14	3 Sagittarii	5	—27	—90	5 3.8	—11 2 43	—0.8345	.5557	—.0298	—9.6684	.9467
14	B.A.C. 6063	6½	—17	—90	9 2.0	— 7 13 0	—0.6395	.5559	—.0194	—9.6722	.9458
14	B.A.C. 6072	6½	+21	—39	9 51.1	— 6 25 37	+0.1055	.5528	—.0182	—9.6819	.9429
14	γ^1 Sagittarii	4	+61	+16	12 35.2	— 3 47 24	+0.9936	.5492	—.0106	—9.6935	.9393
14	B.A.C. 6120	6½	— 2	—66	13 23.9	— 3 0 23	—0.3381	.5557	—.0073	—9.6769	.9444
14	B.A.C. 6127	5	+ 3	—59	13 55.5	— 2 29 2	—0.2343	.5552	—.0058	—9.6782	.9440
14	B.A.C. 6190	6½	+15	—44	17 57.1	+ 1 22 58	+0.0084	.5548	+.0045	—9.6814	.9431
14	B.A.C. 6191	6½	— 6	—70	17 57.4	+ 1 23 12	—0.3912	.5567	+.0045	—9.6763	.9446
14	B.A.C. 6220	6½	+ 5	—57	19 56.6	+ 3 18 9	—0.1967	.5564	+.0097	—9.6786	.9439
15	τ Sagittarii	3½	+11	—55	15 15.5	— 2 4 48	—0.1712	.5570	+.0618	—9.6698	.9464
15	B.A.C. 6628	6	+59	— 8	22 47.4	+ 5 10 46	+0.6541	.5525	+.0818	—9.6736	.9454
16	B.A.C. 6666	6	+18	—49	1 7.2	+ 7 25 30	—0.0744	.5558	+.0883	—9.6611	.9488
16	ω Sagittarii	5½	+48	—20	12 20.7	— 5 45 12	+0.4384	.5515	+.1168	—9.6522	.9511
16	A Sagittarii	5	+52	—17	13 42.8	— 4 26 5	+0.4982	.5507	+.1216	—9.6407	.9515
17	B.A.C. 7197	6	+40	—35	11 28.5	— 7 26 33	+0.1836	.5462	+.1730	—9.5964	.9632
17	χ Capricor.	6	+47	—30	20 31.4	+ 1 17 29	+0.2717	.5440	+.1927	—9.5692	.9679
17	27 Capricor.	6	+17	—63	20 58.4	+ 1 43 32	—0.3091	.5452	+.1935	—9.5569	.9698
17	φ Capricor.	6	+51	—26	23 42.8	+ 4 22 15	+0.3481	.5423	+.1972	—9.5591	.9694
18	ε Capricor.	4½	+70	+26	9 26.9	—10 13 36	+1.1890	.5364	+.2180	—9.5362	.9727
18	κ Capricor.	5	+71	+21	11 59.5	— 7 46 11	+1.1376	.5361	+.2223	—9.5239	.9743
18	δ Capricor.	3	—36	—90	14 1.8	— 5 48 1	—1.2414	.5427	+.2260	—9.4603	.9811
18	29 Aquarii	6	+73	+37	21 6.4	+ 1 2 18	—1.3044	.5337	+.2377	—9.4817	.9791
19	42 Aquarii	6	—37	—90	3 47.8	+ 7 30 15	—1.2826	.5387	+.2483	—9.3696	.9877
19	45 Aquarii	6	+12	—79	4 48.8	+ 8 29 11	—0.5440	.5370	+.2501	—9.3843	.9869
19	50 Aquarii	6	+58	—28	7 20.1	+10 55 27	+0.3302	.5107	+.2531	—9.3913	.9864
19	B.A.C. 7835	6½	+60	—26	9 55.5	—10 34 20	+0.3703	.5339	+.2566	—9.3728	.9876
19	70 Aquarii	6	+56	—31	18 34.6	— 2 12 20	+0.2645	.5331	+.2681	—9.2925	.9915
20	h^1 Aquarii	6	+18	—74	2 23.1	+ 5 20 43	—0.4885	.5339	+.2758	—9.1679	.9952
20	h^2 Aquarii	7	+22	—68	2 27.8	+ 5 26 12	—0.4065	.5338	+.2759	—9.1709	.9952
20	h^3 Aquarii	7	+35	—53	2 43.5	+ 5 40 27	—0.1495	.5334	+.2761	—9.1801	.9950
20	h^4 Aquarii	7½	+30	—59	3 14.9	+ 6 10 34	—0.2508	.5335	+.2767	—9.1678	.9952
20	φ Aquarii	5	— 7	—90	6 41.4	+ 9 30 28	—0.9471	.5342	+.2795	—9.0746	.9969
20	χ Aquarii	5½	+82	+14	7 52.0	+10 38 46	+1.0862	.5318	+.2815	—9.1700	.9952
20	96 Aquarii	5½	—24	—90	9 3.5	+11 47 54	—1.1992	.5347	+.2822	—9.0124	.9977
20	B.A.C. 8134	6½	—44	—90	9 59.6	—11 17 48	—1.3867	.5347	+.2831	—8.9780	.9980
20	20 Piscium	6	+60	—31	22 24.4	+ 0 42 22	+0.2799	.5345	+.2905	—8.7926	.9992
21	24 Piscium	6½	+86	+36	0 43.6	+ 2 57 2	+1.3437	.5341	+.2912	—8.8380	.9990
21	B.A.C. 8365	6½	+64	—27	6 21.7	+ 8 23 53	+0.3530	.5365	+.2931	—8.3552	.9999
21	B.A.C. 57	6½	+40	—50	12 13.7	— 9 55 54	—0.0957	.5378	+.2943	+8.1933	.9999
21	44 Piscium	6	+89	—10	15 43.7	— 6 32 56	+0.6814	.5393	+.2943	+8.3015	.9999
22	60 Piscium	6	—17	—84	1 42.1	+ 3 5 8	—1.1358	.5425	+.2927	+9.0163	.9976
22	B.A.C. 221	6	+66	—25	2 5.9	+ 3 28 8	+0.3719	.5437	+.2923	+8.8990	.9986
22	B.A.C. 274	6½	+90	— 6	7 16.8	+ 8 28 24	+0.7362	.5464	+.2924	+8.9978	.9978
22	ε Piscium	4	+32	—57	8 40.1	+ 9 48 45	—0.2458	.5465	+.2895	+9.0931	.9966
24	τ^1Arietis	5	+90	+34	17 57.7	— 7 1 40	+1.1663	.5907	+.2024	+9.5469	.9712
24	66 Arietis	6½	+49	—29	20 42.9	— 4 23 9	+0.0651	.5871	+.2003	+9.5794	.9662
24	7 Tauri	6	—24	—66	22 58.8	— 2 12 42	—1.1397	0.5844	+.1920	+9.6090	9.9608

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log. sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Apr. 24	9 Tauri	6	+61	—17	23 58.2	— 1 15 43	+0.2703	0.5913	+.1868	+9.5872	9.9649
25	*g* Pleiadum	5½	+30	—44	2 55.6	+ 1 34 26	—0.2720	.5904	+.1790	+9.6066	.9613
25	*b* Pleiadum	4½	+40	—35	2 56.5	+ 1 35 12	—0.0929	.5912	+.1790	+9.6035	.9618
25	*m* Pleiadum	7	0	—66	3 3.1	+ 1 41 35	—0.7925	.5881	+.1788	+9.6159	.9594
25	*s* Tauri	5	+22	—52	3 4.6	+ 1 43 0	—0.4216	.5900	+.1788	+9.6096	.9607
25	1 Pleiadum	8	+56	—21	3 10.3	+ 1 48 31	+0.1844	.5927	+.1788	+9.5992	.9627
25	2 Pleiadum	8½	+23	—50	3 12.9	+ 1 50 59	—0.3933	.5898	+.1779	+9.6096	.9607
25	3 Pleiadum	8½	+44	—31	3 13.8	+ 1 51 53	—0.0173	.5916	+.1779	+9.6030	.9620
25	4 Pleiadum	8	+30	—43	3 14.4	+ 1 52 23	—0.2637	.5904	+.1779	+9.6074	.9611
25	5 Pleiadum	9	+15	—59	3 15.9	+ 1 53 53	—0.5490	.5890	+.1779	+9.6123	.9601
25	6 Pleiadum	9	+33	—41	3 15.8	+ 1 53 46	—0.2136	.5907	+.1779	+9.6066	.9613
25	*c* Pleiadum	5	+30	—44	3 18.8	+ 1 56 37	—0.2824	.5903	+.1779	+9.6080	.9610
25	7 Pleiadum	8	+47	—28	3 19.9	+ 1 57 44	+0.0436	.5919	+.1778	+9.6022	.9621
25	B.A.C. 1155	7	+90	+19	3 20.1	+ 1 57 54	+0.9203	.5958	+.1777	+9.5865	.9650
25	*k* Pleiadum	7½	+19	—54	3 20.4	+ 1 58 11	—0.4618	.5897	+.1776	+9.6111	.9604
25	*l* Pleiadum	7½	+21	—52	3 23.6	+ 2 1 14	—0.4262	.5900	+.1775	+9.6106	.9604
25	9 Pleiadum	8½	+40	—34	3 29.0	+ 1 6 25	—0.0791	.5916	+.1772	+9.6049	.9616
25	*d* Pleiadum	5	+54	—21	3 30.7	+ 2 8 2	+0.1632	.5927	+.1769	+9.6007	.9624
25	10 Pleiadum	8	+37	—36	3 33.2	+ 2 10 26	—0.1313	.5913	+.1767	+9.6061	.9613
25	11 Pleiadum	8½	+46	—28	3 37.9	+ 2 15 0	+0.0313	.5923	+.1765	+9.6034	.9619
25	12 Pleiadum	7½	+25	—48	3 45.0	+ 2 21 47	—0.3584	.5904	+.1764	+9.6106	.9604
25	13 Pleiadum	8½	+54	—21	3 47.5	+ 2 24 3	+0.1641	.5928	+.1763	+9.6016	.9622
25	14 Pleiadum	9	+69	—10	3 49.7	+ 2 26 17	+0.3958	.5804	+.1763	+9.5976	.9630
25	15 Pleiadum	8½	+48	—27	3 52.0	+ 2 28 29	+0.0463	.5923	+.1762	+9.6039	.9618
25	16 Pleiadum	9½	+66	—12	3 52.4	+ 2 28 52	+0.3530	.5937	+.1762	+9.5985	.9628
25	17 Pleiadum	8	+73	— 5	3 52.9	+ 2 29 22	+0.4443	.5942	+.1761	+9.5969	.9631
25	18 Pleiadum	8	+47	—28	3 53.0	+ 2 29 28	+0.0386	.5923	+.1761	+9.6041	.9617
25	*p* Pleiadum	7½	+48	—26	3 53.7	+ 2 30 6	+0.0629	.5924	+.1760	+9.6037	.9618
25	19 Pleiadum	8	+80	— 3	3 54.0	+ 2 30 26	+0.5350	.5946	+.1760	+9.5953	.9634
25	20 Pleiadum	8	+23	—51	3 54.2	+ 2 30 38	—0.3995	.5903	+.1759	+9.6118	.9602
25	21 Pleiadum	8½	+19	—54	3 54.5	+ 2 30 49	—0.4662	.5900	+.1758	+9.6129	.9600
25	22 Pleiadum	8	+60	—16	3 55.2	+ 2 31 32	+0.2625	.5934	+.1758	+9.6002	.9625
25	23 Pleiadum	8½	+77	— 4	3 56.4	+ 2 32 42	+0.0501	.5945	+.1757	+9.5960	.9633
25	24 Pleiadum	8	+39	—35	3 56.7	+ 2 32 57	—0.0979	.5916	+.1757	+9.6067	.9612
25	*η* Tauri	3	+49	—25	3 56.7	+ 2 33 1	+0.0807	.5924	+.1756	+9.6035	.9618
25	25 Pleiadum	8½	+84	— 0	4 0.2	+ 2 36 18	+0.5785	.5949	+.1755	+9.5948	.9635
25	26 Pleiadum	9	+90	+ 3	4 2.5	+ 2 38 32	+0.6506	.5951	+.1754	+9.5937	.9637
25	27 Pleiadum	8½	+40	—34	4 13.3	+ 2 48 52	—0.0810	.5920	+.1753	+9.6072	.9611
25	28 Pleiadum	7	+90	+13	4 17.1	+ 2 52 35	+0.8084	.5961	+.1753	+9.5916	.9641
25	29 Pleiadum	8	+40	—34	4 19.5	+ 2 54 50	—0.0903	.5920	+.1751	+9.6077	.9611
25	*s* Pleiadum	7½	+71	— 8	4 30.1	+ 3 5 1	+0.4182	.5942	+.1749	+9.5992	.9627
25	*f* Pleiadum	4½	+59	—17	4 34.8	+ 3 9 34	+0.2395	.5934	+.1747	+9.6027	.9620
25	*h* Pleiadum	5½	+54	—21	4 35.3	+ 3 9 58	+0.1588	.5930	+.1745	+9.6042	.9617
25	30 Pleiadum	8½	+70	— 9	4 35.9	+ 3 10 38	+0.4060	.5941	+.1743	+9.5998	.9626
25	31 Pleiadum	8	+40	—34	4 37.1	+ 3 11 42	—0.0913	.5921	+.1741	+9.6083	.9610
25	32 Pleiadum	8	+41	—33	4 38.9	+ 3 13 31	—0.0713	.5920	+.1739	+9.6084	.9609
25	33 Pleiadum	8½	+48	—26	4 40.7	+ 3 15 13	+0.0647	.5926	+.1738	+9.6061	.9613
25	34 Pleiadum	7½	+88	+ 2	4 48.0	+ 3 22 12	+0.6117	.5954	+ 1737	+9.5965	.9632
25	35 Pleiadum	9	+50	—25	4 48.3	+ 3 22 27	+0.0896	.5930	+.1736	+9.6060	.9614
25	36 Pleiadum	9	+52	—23	4 51.7	+ 3 25 44	+0.1257	.5932	+.1735	+9.6055	.9615
25	37 Pleiadum	8	+45	—29	4 52.2	+ 3 26 11	—0.0056	.5927	+.1734	+9.6078	.9610
25	38 Pleiadum	8	+77	— 5	4 53.3	+ 3 27 20	+0.4920	.5952	+.1733	+9.5992	.9627
25	B.A.C. 1192	6½	—31	—65	4 59.1	+ 3 32 48	—1.1945	.6008	+.1732	+9.6283	.9567
25	39 Pleiadum	8	+38	—35	5 4.8	+ 3 38 22	—0.1142	.5923	+.1732	+9.6103	.9605
25	40 Pleiadum	7½	+72	— 7	5 13.7	+ 3 46 50	+0.4369	0.5950	+.1721	+9.6012	9.9623

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels. Northern.	Limiting Parallels. Southern.	Washington Mean Time of ☌.	At Washington Mean Time of Conjunction. *H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Apr. 25	36 Tauri	6½	+90	+33	10 17.5	+ 8 38 1	+1.0910	0.6009	+.1570	+9.6044	9.9617
25	*p* Tauri	6	— 7	—64	12 39.4	+10 54 1	—0.9045	.5928	+.1501	+9.6435	.9533
25	φ Tauri	5	—48	—63	16 10.2	— 9 44 3	—1.2862	.5920	+.1394	+9.6571	.9499
25	χ Tauri	5½	+80	+ 1	17 1.9	— 8 54 34	+0.5295	.6018	+.1367	+9.6306	.9563
26	B.A.C. 1648	6½	+57	— 9	14 21.9	+11 30 48	+0.2065	.6047	+.0600	+9.6689	.9467
26	β Tauri	2	+25	—38	16 15.7	—10 40 21	—0.3471	.6020	+.0594	+9.6784	.9440
26	B.A.C. 1709	6½	— 6	—61	17 29.7	— 9 29 24	—0.8628	.5986	+.0556	+9.6865	.9415
26	B.A.C. 1746	6½	+30	—31	19 49.0	— 7 16 8	—0.2415	.6078	+.0473	+9.6654	.9477
26	B.A.C. 1772	6	+ 1	—61	21 0.5	— 6 7 43	—0.7520	.5989	+.0434	+9.6874	.9413
27	136 Tauri	5	+90	+37	2 10.6	— 1 10 54	+0.9847	.6078	+.0251	+9.6655	.9476
27	B.A.C. 1882	6½	+26	—34	3 19.6	— 0 4 50	—0.3364	.5997	+.0212	+9.6844	.9422
27	κ Aurigæ	4	—10	—61	10 14.6	+ 6 32 31	—0.9095	.5941	—.0023	+9.6930	.9395
27	B.A.C. 2097	6½	+62	— 1	15 50.4	+11 54 10	+0.2820	.5982	—.0211	+9.6760	.9447
27	49 Aurigæ	6½	+72	+ 5	17 39.0	—10 21 45	+0.4136	.5981	—.0276	+9.6735	.9454
27	53 Aurigæ	6½	+10	—52	18 49.2	— 9 14 34	—0.6075	.5915	—.0310	+9.6870	.9414
27	54 Aurigæ	6	+51	—11	19 16.6	— 8 48 14	+0.1054	.5953	—.0333	+9.6771	.9444
27	28 Geminor.	6	+ 4	—60	21 13.1	— 6 56 35	—0.7025	.5890	—.0415	+9.6871	.9413
28	47 Geminor.	6	+90	+21	7 26.5	+ 2 51 42	+0.7986	.5900	—.0708	+9.6584	.9496
28	53 Geminor.	6	+22	—43	9 11.1	+ 4 32 4	—0.4087	.5825	—.0763	+9 6736	.9453
28	59 Geminor.	6½	+20	—46	12 33.1	+ 7 45 58	—0.4454	.5796	—.0868	+9.6704	.9463
28	ι Geminor.	4	+ 7	—59	13 1.0	+ 8 11 45	—0.6584	5780	—.0879	+9.6728	.9456
28	*b*¹ Geminor.	5½	—27	—62	14 25.6	+ 9 33 57	—1.1246	.5743	—.0915	+9.6774	.9442
28	*b*² Geminor.	5½	—11	—62	14 37.1	+ 9 45 4	—0.9363	.5751	—.0926	+9.6746	.9451
28	B.A.C. 2472	6	—14	—62	14 57.2	+10 4 23	—0.9688	.5744	—.0931	+9.6746	.9451
28	υ Geminor.	5	+37	—30	17 4.1	—11 53 45	—0.1447	.5773	—.0988	+9.6602	.9490
28	*c* Geminor.	6	+90	+ 9	20 22.5	— 8 43 7	+0.6348	.5781	—.1091	+9.6438	.9532
29	φ Geminor.	5	— 4	—63	0 8.9	— 5 5 26	—0.8374	.5658	—.1188	+9.6590	.9494
29	ω¹ Cancri	6	+55	—16	3 13.5	— 2 7 53	+0.1826	.5690	—.1267	+9.6385	.9545
29	ω² Cancri	6½	+72	— 4	3 33.8	— 1 48 18	+0.4534	.5697	—.1280	+9.6337	.9555
29	ψ¹ Cancri	6½	— 2	—64	7 4.2	+ 1 34 11	—0.8232	.5605	—.1358	+9.6460	.9527
29	ψ² Cancri	4	+17	—54	7 10.6	+ 1 40 17	—0.5013	.5619	—.1364	+9.6409	.9539
29	λ Cancri	6	+72	— 6	11 27.0	+ 5 47 14	+0.4235	.5616	—.1472	+9.6173	.9591
29	υ¹ Cancri	7	+16	—56	14 3.0	+ 8 17 34	—0.5196	.5548	—.1527	+9.6259	.9573
29	υ² Cancri	6½	+31	—41	14 53.7	+ 9 6 23	—0.2477	.5551	—.1548	+9.6197	.9586
29	B.A.C. 2840	7	+16	—57	15 20.7	+ 9 32 25	—0.5278	.5539	—.1551	+9.6230	.9579
29	υ³ Cancri	6	+24	—49	16 8.8	+10 18 47	—0.3851	.5535	—.1572	+9.6187	.9588
30	B.A.C. 3138	6	— 5	—68	11 0.9	+ 4 31 35	—0.8948	.5325	—.1944	+9.5712	.9676
May 1	34 Leonis	6	+90	+48	15 20.0	+ 7 56 49	+1.3567	.5142	—.2330	+9.3854	.9868
1	37 Leonis	6	+64	—22	17 54.5	+10 26 38	+0.3424	.5096	—.2354	+9.3967	.9861
2	*l* Leonis	5	+22	—65	11 2.7	+ 3 4 56	—0.4325	.4989	—.2501	+9.2921	.9915
2	χ Leonis	5	+90	+ 2	19 38.1	+11 25 55	+0.8696	.4941	—.2550	+9.1492	.9956
3	B.A.C. 3837	6½	—22	—81	0 32.1	— 7 48 18	—1.1866	.4897	—.2574	+9.1866	.9948
3	σ Leonis	4	+45	—43	4 29.9	— 3 56 57	+0.0056	.4896	—.2589	+9.0740	.9969
3	89 Leonis	6	+90	+34	11 54.1	+ 3 15 7	+1.3170	.4882	—.2617	+8.8272	.9990
3	β Virginis	3½	+63	—27	21 1.4	—11 52 17	+0.3340	.4854	—.2631	+8.6512	.9996
4	B.A.C. 4043	6½	+70	—23	1 50.2	— 7 11 9	+0.4336	.4837	—.2638	+8.3635	9.9999
4	13 Virginis	6	+90	+ 7	13 0.5	+ 3 41 20	+0.9746	.4832	—.2636	+5.9185	0.0000
4	η Virginis	3½	—41	—90	13 43.2	+ 4 22 58	—1.3820	.4832	—.2634	+7.3391	0.0000
5	B A.C. 4255	6½	+39	—50	0 27.0	— 9 10 17	—0.0972	.4834	—.2614	—8.7966	9.9992
5	B.A.C. 4294	6½	+83	— 7	5 28.1	— 4 17 11	+0.7342	.4832	—.2599	—8.9833	.9980
5	B.A.C. 4394	5½	+81	—11	17 21.1	+ 7 16 56	+0.6670	.4852	—.2548	—9.1554	.9955
5	58 Virginis	6	+80	+19	22 21.7	—11 50 36	+1.1456	.4867	—.2518	—9.1845	.9949
6	α Virginis	1	+77	— 6	2 41.0	— 8 38 18	+0.9470	.4876	—.2492	—9.2573	.9928
6	*h* Virginis	6	—58	—90	7 1.6	— 3 24 45	—1.4197	.4920	—.2462	—9.2145	.9941
6	86 Virginis	6	+ 9	—85	14 9.8	+ 3 31 48	—0.6243	0.4937	—.2407	—9.3076	9.9909

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p′	q′	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
May 7	B.A.C. 4679	6½	+32	—52	0 12.9	—10 41 54	—0.1383	0.4972	—.2317	—9.3923	9.9864
7	B.A.C. 4700	5½	+70	—15	3 37.6	— 7 22 58	+0.5710	.4973	—.2280	—9.4304	.9836
8	B.A.C. 4923	6	+69	+21	3 48.2	— 7 54 29	+1.1210	.5089	—.1976	—9.5500	.9708
8	B.A.C. 5023	6	+60	—16	13 23.3	+ 1 23 12	+0.5226	.5164	—.1824	—9.5712	.9676
9	42 Libræ	5½	+38	—36	1 4.3	—11 17 32	+0.1526	.5247	—.1622	—9.5982	.9629
9	B.A.C. 5197	6	+65	— 3	3 43.3	— 8 43 37	+0.7441	.5241	—.1572	—9.6138	.9598
9	A Scorpii	5	+65	+ 5	7 26.0	— 5 8 4	+0.4387	.5258	—.1494	—9.6243	.9576
9	B.A.C. 5253	6	+27	—46	7 35.4	— 4 58 57	—0.0274	.5294	—.1491	—9.6111	.9604
9	B.A.C. 5254	6	— 2	—90	7 37.3	— 4 56 57	—0.6490	.5315	—.1494	—9.6016	.9622
9	B.A.C. 5255	6	+65	+ 9	7 42.8	— 4 51 46	+0.9281	.5257	—.1491	—9.6257	.9573
9	3 Scorpii	6	+65	— 5	7 55.9	— 4 9 3	+0.7126	.5267	—.1487	—9.6230	.9579
9	B.A.C. 5286	6½	+28	—45	9 48.5	— 2 50 7	+0.0006	.5312	—.1450	—9.6165	.9593
9	B.A.C. 5314	6	+65	+ 3	12 4.8	— 0 38 10	+0.8345	.5286	—.1407	—9.6335	.9556
9	B.A.C. 5347	5	+64	+19	14 15.4	+ 1 28 7	+1.0547	.5289	—.1363	—9.6410	.9538
9	σ Scorpii	3½	0	—79	20 22.5	+ 7 23 9	—0.5087	.5384	—.1233	—9.6300	.9564
10	α Scorpii	1½	+25	—45	0 8.5	+11 1 38	0.0000	.5385	—.1149	—9.6437	.9532
10	B.A.C. 5800	6½	—41	—90	20 20.4	+ 6 32 11	—1.0718	.5530	—.0673	—9.6542	.9506
11	43 Ophiuchi	6	+19	—45	0 20.5	+10 23 50	—0.0080	.5498	—.0572	—9.6716	.9459
11	3 Sagittarii	5	—20	—90	11 57.4	— 2 21 39	—0.7124	.5566	—.0293	—9.6684	.9469
11	B.A.C. 6063	6½	—10	—80	14 55.9	+ 0 28 22	—0.5135	.5568	—.0186	—9.6722	.9458
11	B.A.C. 6072	6½	+28	—31	15 45.2	+ 1 15 51	+0.2343	.5533	—.0164	—9.6819	.9429
11	γ^1 Sagittarii	4	+61	+29	18 29.6	+ 3 54 25	+1.1274	.5495	—.0088	—9.6935	.9393
11	B.A.C. 6120	6½	+ 4	—57	19 17.5	+ 4 40 34	—0.2073	.5558	+.0073	—9.6771	.9444
11	B.A.C. 6127	5	+ 9	—51	19 51.1	+ 5 13 2	—0.1030	.5556	+.0055	—9.6782	.9440
11	B.A.C. 6190	6½	+22	—36	23 52.5	+ 9 5 47	+0.1442	.5548	+.0052	—9.6814	.9431
11	B.A.C. 6191	6½	+ 1	—60	23 52.8	+ 9 6 1	—0.2569	.5567	+.0052	—9.6763	.9446
12	B.A.C. 6220	6½	+12	—48	1 52.4	+11 1 24	—0.0599	.5558	+.0103	—9.6786	.9439
12	τ Sagittarii	3½	+19	—46	21 18.7	+ 5 45 47	—0.0183	.5553	+.0627	—9.6698	.9464
13	B.A.C. 6628	6	+62	+ 3	4 55.0	—10 54 11	+0.8168	.5500	+.0826	—9.6736	.9454
13	B.A.C. 6666	6	+27	—40	7 16.4	— 8 37 52	+0.0859	.5529	+.0889	—9.6611	.9488
13	ω Sagittarii	5½	+59	—11	18 38.8	+ 2 20 23	+0.6099	.5473	+.1150	—9.6522	.9511
13	A Sagittarii	5	+62	— 7	20 1.7	+ 3 40 19	+0.6704	.5469	+.1207	—9.6507	.9515
14	17 Capricor.	6	—31	—90	17 13.3	+ 0 7 46	—1.1028	.5463	+.1691	—9.5742	.9671
14	B.A.C. 7197	6	+50	—25	18 12.2	+ 1 4 42	+0.3655	.5405	+.1713	—9.5964	.9632
15	η Capricor.	5½	—54	—90	1 35.2	+ 8 12 39	—1.3234	.5440	+.1854	—9.5426	.9718
15	χ Capricor.	6	+52	—25	3 0.3	+ 9 33 53	+0.3703	.5372	+.1897	—9.5692	.9679
15	27 Capricor.	6	+26	—52	3 55.4	+10 28 8	—0.1303	.5382	+.1911	—9.5568	.9698
15	φ Capricor.	6	+69	+26	6 43.9	—10 49 1	+1.1660	.5350	+.1966	—9.5590	.9695
15	γ Capricor.	3½	—37	—90	18 10.2	+ 0 14 31	—1.2371	.5366	+.2170	—9.4734	.9799
15	ϰ Capricor.	5	—71	+45	19 20.5	+ 1 22 30	+1.3372	.5286	+.2192	—9.5239	.9743
15	δ Capricor.	3	—22	—90	21 26.3	+ 3 24 8	—1.0737	.5346	+.2232	—9.4603	.9811
16	ι Aquarii	4½	—36	—90	6 39.9	—11 40 18	—1.2566	.5319	+.2371	—9.4004	.9858
16	42 Aquarii	6	—22	—90	11 37.2	— 6 52 36	—1.1194	.5299	+.2442	—9.3696	.9877
16	45 Aquarii	6	+21	—66	12 40.1	— 5 51 44	—0.3702	.5281	+.2457	—9.3842	.9869
16	50 Aquarii	6	+68	—18	15 16.3	— 3 20 36	+0.5163	.5254	+.2488	—9.3913	.9864
16	B.A.C. 7835	6½	+71	—16	17 56.7	— 0 45 20	+0.5563	.5252	+.2525	—9.3728	.9876
16	58 Aquarii	6	—39	—90	18 46.4	+ 0 2 47	—1.3125	.5285	+.2535	—9.3047	.9910
17	70 Aquarii	6	+66	—22	2 52.8	+ 7 53 37	+0.4448	.5238	+.2628	—9.2925	.9915
17	h^1 Aquarii	6	—26	—63	10 56.9	— 8 17 38	—0.3252	.5246	+.2703	—9.1678	.9952
17	h^2 Aquarii	7	—30	—58	11 1.7	— 8 13 2	—0.2420	.5246	+.2706	—9.1709	.9952
17	h^3 Aquarii	7	+44	—44	11 18.0	+ 7 57 15	+0.0189	.5242	+.2708	—9.1800	.9950
17	h^4 Aquarii	7½	+40	—48	11 56.6	+ 7 19 54	—0.0564	.5240	+.2715	—9.1678	.9952
17	φ Aquarii	5	— 2	—90	15 23.8	+ 3 59 17	—0.7944	.5251	+.2742	—9.0745	.9969
17	χ Aquarii	5½	+82	+28	16 36.7	+ 2 48 38	+1.2612	.5225	+.2753	—9.1699	.9952
17	96 Aquarii	5½	—13	—90	17 50.6	+ 1 36 5	—1.0520	0.5251	+.2757	—9.0123	9.9977

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			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
May 17	B.A.C. 8134	6½	−28	−90	18 48.6	− 0 39 56	−1.2440	0.5255	+.2767	−8.9779	9.9980
18	20 Piscium	6	+69	−23	7 37.8	+11 43 44	+0.4343	.5261	+.2847	−8.7924	.9992
18	B.A.C. 8365	6½	+74	−19	15 50.2	− 4 19 37	+0.4992	.5278	+.2873	−8.3547	.9999
18	B.A.C. 57	6½	+47	−43	21 52.8	+ 1 31 15	+0.0355	.5298	+.2883	+8.1933	.9999
19	44 Piscium	6	+90	− 2	1 28.9	+ 5 0 20	+0.8179	.5314	+.2886	+8.3021	.9999
19	60 Piscium	6	−11	−84	11 43.7	− 9 5 8	−1.0380	.5347	+.2870	+9.0164	.9976
19	B.A.C. 221	6	+73	−19	12 8.1	− 8 41 31	+0.4891	.5365	+.2869	+8.8989	.9986
19	B.A.C. 274	6½	+90	0	17 27.9	− 3 32 26	+0.8463	.5402	+.2850	+8.9979	.9978
19	ε Piscium	4	+37	−51	18 52.1	− 2 11 6	−0.1497	.5401	+.2842	+9.0932	.9966
20	π Piscium	5	+37	−49	10 6.6	−11 28 3	−0.1382	.5501	+.2732	+9.2961	.9913
21	27 Arietis	6	+56	−27	8 52.1	+10 27 45	+0.1957	.5701	+.2427	+9.4677	.9804
21	B.A.C. 782	6½	+ 7	−72	9 57.3	+11 30 25	−0.6986	.5681	+.2408	+9.4958	.9776
21	μ Arietis	5½	−10	−71	13 30.0	− 9 4 59	−0.9888	.5688	+.2338	+9.5213	.9746
21	ε Arietis	4½	+ 1	−69	20 13.2	− 2 37 21	−0.7975	.5764	+.2209	+9.5497	.9708
24	β Tauri	2	+20	−43	2 37.6	+ 1 29 42	−0.4408	.6087	+.0586	+9.6784	.9440
24	B.A.C. 1772	6	− 6	−61	7 15.5	+ 5 55 25	−0.8502	.6061	+.0419	+9.6874	.9413
24	136 Tauri	5	+90	+29	12 18.7	+10 45 21	+0.8608	.6154	+.0238	+9.6655	.9476
24	B.A.C. 1882	6½	+19	−41	13 26.1	+11 49 49	−0.4476	.6075	+.0202	+9.6844	.9422
24	κ Aurigæ	4	−19	−61	20 11.2	− 5 42 47	−1.0247	.6026	−.0039	+9.6930	.9395
25	B.A.C. 2097	6½	+53	− 9	1 38.5	− 0 29 40	+0.1448	.6065	−.0231	+9.6759	.9447
25	49 Aurigæ	6½	+61	− 3	3 24.4	+ 1 11 41	+0.2715	.6066	−.0289	+9.6735	.9454
25	53 Aurigæ	6½	+ 2	−61	4 32.6	+ 2 16 58	−0.7383	.6000	−.0334	+9.6870	.9414
25	54 Aurigæ	6	+43	−19	4 59.4	+ 2 42 34	−0.0343	.6037	−.0346	+9.6771	.9444
25	28 Geminor.	6	− 4	−61	6 52.8	+ 4 31 6	−0.8347	.5979	−.0410	+9.6871	.9413
25	47 Geminor.	6	+90	+12	16 49.4	− 9 57 27	+0.6326	.5993	−.0735	+9.6584	.9496
25	53 Geminor.	6	+13	−52	18 31.1	− 8 19 58	−0.5617	.5912	−.0792	+9.6736	.9453
25	59 Geminor.	6½	+10	−56	21 47.4	− 5 11 48	−0.6026	.5883	−.0889	+9.6704	.9463
25	ι Geminor.	4	− 3	−62	22 14.5	− 4 45 48	−0.8136	.5869	−.0901	+9.6728	.9456
25	b^1 Geminor.	5½	−50	−62	23 36.6	− 3 27 3	−1.2747	.5830	−.0947	+9.6774	.9442
25	b^2 Geminor.	5½	−24	−62	23 47.9	− 3 16 14	−1.0897	.5840	−.0953	+9.6746	.9451
26	B.A.C. 2672	6	−27	−62	0 7.4	− 2 57 30	−1.1223	.5835	−.0961	+9.6746	.9451
26	υ Geminor.	5	+27	−39	2 10.6	− 0 59 17	−0.3122	.5860	−.1017	+9.6602	.9490
26	c Geminor.	6	+74	− 1	5 23.3	+ 2 5 39	+0.4521	.5867	−.1112	+9.6438	.9532
26	φ Geminor.	5	−16	−63	9 3.3	+ 5 36 51	−1.0060	.5754	−.1220	+9.6590	.9494
26	ω^1Cancri	6	+44	−26	12 2.6	+ 8 29 6	−0.0019	.5776	−.1296	+9.6385	.9545
26	ω^2 Cancri	6½	+61	−12	12 22.4	+ 8 48 7	+0.2642	.5787	−.1305	+9.6337	.9555
26	ψ^1 Cancri	6½	−15	−64	15 46.4	−11 55 46	−0.9980	.5691	−.1396	+9.6460	.9527
26	ψ^2 Cancri	4	+ 7	−63	16 1.8	−11 40 33	−0.6796	.5704	−.1397	+9.6409	.9539
26	λ Cancri	6	+58	−16	20 2.0	− 7 49 56	+0.2260	.5695	−.1499	+9.6172	.9591
26	υ^1 Cancri	7	+ 5	−65	22 33.6	− 5 24 3	−0.7064	.5621	−.1565	+9.6259	.9573
26	υ^2 Cancri	6½	+21	−52	23 22.8	− 4 36 37	−0.4369	.5637	−.1575	+9.6197	.9586
26	B.A.C. 2840	7	+ 5	−65	23 49.1	− 4 11 23	−0.7160	.5617	−.1589	+9.6230	.9579
27	υ^3 Cancri	6	+13	−60	0 35.8	− 3 27 21	−0.5764	.5615	−.1610	+9.6187	.9588
27	γ Cancri	4½	+90	+46	5 38.5	+ 1 25 10	+1.2517	.5633	−.1725	+9.5733	.9672
27	B.A.C. 3138	6	−20	−68	18 57.3	− 9 44 18	−1.0983	.5397	−.1973	+9.5712	.9676
28	34 Leonis	6	+90	+22	22 36.9	− 6 58 39	+1.1064	.5198	−.2346	+9.3855	.9868
29	37 Leonis	6	+50	−34	1 8.2	− 4 31 55	+0.1051	.5146	−.2379	+9.2968	.9861
29	l Leonis	5	+10	−79	18 3.5	+11 53 15	−0.6764	.5004	−.2512	+9.2921	.9915
30	χ Leonis	5	+85	−11	2 26.2	− 4 2 25	+0.6277	.4968	−.2563	+9.1493	.9956
30	σ Leonis	4	+33	−56	11 11.3	+ 4 31 48	−0.2269	.4920	−.2598	+9.0741	.9969
30	89 Leonis	6	+90	+14	18 30.7	+11 39 16	+1.0795	.4895	−.2618	+8.8272	.9990
31	β Virginis	3½	+50	−39	3 33.1	− 3 32 59	+0.1090	.4862	−.2631	+8.6513	.9996
31	B.A.C. 4043	6½	+56	−34	8 19.8	+ 1 5 56	+0.2123	.4852	−.2633	+8.3637	9.9999
31	13 Virginis	6	−28	−90	19 26.0	+11 54 23	−1.2650	.4834	−.2625	+5.9160	0.0000
June 1	B.A.C. 4255	6½	+29	−61	6 49.7	− 1 0 6	−0.2914	0.4833	−.2600	−8.7966	9.9992

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				Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
				°	°	h. m.	h. m. s.					
June	1	B.A.C. 4294	6½	+76	−17	11 49.9	+ 3 52 7	+0.544	0.4830	−.2584	−8.9883	9.9980
	2	B.A.C. 4394	5½	+71	−19	23 41.4	− 8 35 27	+0.4946	.4848	−.2530	−9.1554	.9955
	2	58 Virginis	6	+80	+ 8	4 41.6	− 3 43 14	+0.9802	.4857	−.2501	−9.2309	.9936
	2	α Virginis	1	+76	−14	9 0.6	+ 0 28 46	+0.5949	.4873	−.2475	−9.2573	.9928
	2	86 Virginis	6	+ 2	−90	20 28.9	+11 38 21	−0.7593	.4934	−.2385	−9.3075	.9909
	3	B.A.C. 4679	6½	+26	−59	6 31.5	− 2 35 46	−0.2557	.4972	−.2295	−9.3923	.9864
	3	B.A.C. 4700	5½	+63	−21	9 56.1	+ 0 43 3	+0.4593	.4974	−.2258	−9.4304	.9836
	4	B.A.C. 4923	6	+69	+16	10 5.1	+ 0 9 54	+1.0561	.5090	−.1955	−9.5497	.9708
	4	B.A.C. 5023	6	+58	−19	19 39.0	+ 9 26 24	+0.4789	.5168	−.1806	−9.5712	.9676
	5	42 Libræ	5½	+37	−37	7 17.9	− 3 16 27	+0.1320	.5254	−.1606	−9.5982	.9629
	5	B.A.C. 5197	6	+66	− 4	9 56.3	− 0 43 6	+0.7283	.5256	−.1551	−9.6138	.9598
	5	A Scorpii	5	+65	+ 5	13 38.2	+ 2 51 37	+0.8651	.5270	−.1482	−9.6243	.9576
	5	B.A.C. 5253	6	+27	−46	13 37.5	+ 2 50 41	−0.0342	.5306	−.1479	−9.6111	.9604
	5	B.A.C. 5255	6	+65	+ 8	13 54.9	+ 3 7 49	+0.9201	.5270	−.1476	−9.6257	.9573
	5	3 Scorpii	6	+65	− 5	14 8.1	+ 3 18 33	+0.7065	.5279	−.1472	−9.6231	.9579
	5	B.A.C. 5286	6½	+28	−45	16 0.1	+ 5 8 57	−0.0017	.5319	−.1435	−9.6165	.9593
	5	B.A.C. 5314	6	+65	+ 3	18 13.1	+ 7 17 39	+0.8349	.5301	−.1392	−9.6335	.9556
	5	B.A.C. 5347	5	+64	+19	20 25.9	+ 9 26 1	+1.0590	.5302	−.1346	−9.6410	.9538
	6	σ Scorpii	3½	+ 1	−77	2 31.2	− 8 40 42	−0.4897	.5405	−.1206	−9.6300	.9564
	6	α Scorpii	1½	+26	−43	6 16.1	− 5 3 23	+0.0263	.5405	−.1134	−9.6437	.9532
	7	43 Ophiuchi	6	+22	−41	6 19.2	− 5 50 1	+0.0659	.5522	−.0549	−9.6716	.9459
	7	3 Sagittarii	5	−15	−90	16 52.0	+ 4 20 19	−0.6183	.5589	−.0274	−9.6684	.9469
	7	B.A.C. 6063	6½	− 5	−71	20 23.0	+ 7 43 49	−0.4047	.5590	−.0167	−9.6722	.9457
	7	B.A.C. 6072	6½	+34	−25	21 37.8	+ 8 55 55	+0.3356	.5558	−.0152	−9.6819	.9429
	8	γ^1 Sagittarii	4	+62	+44	0 21.2	+11 33 26	+1.2317	.5517	−.0074	−9.6935	.9393
	8	B.A.C. 6120	6½	+ 9	−50	1 8.7	−11 40 48	−0.0994	.5584	−.0055	−9.6769	.9444
	8	B.A.C. 6127	5	+15	−44	1 42.1	−11 8 35	+0.0059	.5583	−.0030	−9.6782	.9440
	8	B.A.C. 6190	6½	+29	−30	5 41.9	− 8 17 25	+0.2600	.5576	+.0073	−9.6814	.9431
	8	B A.C. 6191	6½	+ 8	−53	5 42.3	− 7 17 3	−0.1404	.5595	+.0073	−9.9763	.9446
	8	B.A.C. 6220	6½	+18	−41	7 41.1	− 5 22 54	+0.0600	.5585	+.0124	−9.6786	.9439
	8	φ Sagittarii	3½	−48	−90	17 52.5	+ 4 26 47	−1.1510	.5643	+.0402	−9.6590	.9494
	9	τ Sagittarii	3½	+27	−37	2 59.6	− 0 45 54	+0.1343	.5572	+.0647	−9.6698	.9464
	9	B.A.C. 6628	6	+62	+15	10 35.1	− 3 26 47	+0.9816	.5519	+.0853	−9.6736	.9454
	9	B.A.C. 6666	6	+36	−30	12 55.9	− 1 11 0	+0.2558	.5545	+.0909	−9.6611	.9488
	10	ω Sagittarii	5½	+64	+ 1	0 6.5	+ 9 35 25	+0.7988	.5488	+.1190	−9.6522	.9511
	10	A Sagittarii	5	+64	+ 6	1 39.7	+11 5 39	+0.8620	.5484	+.1228	−9.6482	.9521
	10	17 Capricor.	6	−16	−90	22 52.9	+ 7 34 47	−0.8841	.5461	+.1708	−9.5741	.9671
	10	B.A.C. 7197	6	+59	−15	23 51.1	+ 8 30 57	+0.5334	.5396	+.1727	−9.5964	.9632
	11	η Capricor.	5½	−28	−90	7 16.1	− 8 19 8	−1.0950	.5427	+.1873	−9.5426	.9718
	11	χ Capricor.	6	+68	− 7	9 9.3	− 6 29 38	+0.6946	.5353	+.1909	−9.5691	.9679
	11	27 Capricor.	6	+38	−39	9 37.1	− 6 2 47	+0.1056	.5372	+.1924	−9.5568	.9698
	11	φ Capricor.	6	+69	− 2	12 26.8	− 3 18 47	+0.7772	.5337	+.1981	−9.5590	.9695
	11	γ Capricor.	3½	−17	−90	23 59.1	+ 7 50 47	−0.9918	.5337	+.2176	−9.4734	.9799
	12	δ Capricor.	3	− 6	−90	3 17.3	+11 2 31	−0.8227	.5320	+.2226	−9.4602	.9811
	12	ι Aquarii	4½	−15	−90	12 38.1	− 3 54 45	−1.0240	.5281	+.2363	−9.4003	.9858
	12	42 Aquarii	6	−16	−90	17 39.9	+ 0 57 29	−1.0359	.5261	+.2433	−9.3701	.9877
	12	45 Aquarii	6	+34	−50	18 43.9	+ 1 59 30	−0.1050	.5240	+.2443	−9.3842	.9869
	12	50 Aquarii	6	+74	− 5	21 22.5	+ 4 33 2	+0.7548	.5216	+.2473	−9.3912	.9864
	13	B.A.C. 7835	6½	+77	− 1	0 5.7	+ 7 11 5	+0.8320	.5206	+.2510	−9.3727	.9876
	13	58 Aquarii	6	−16	−90	0 56.3	+ 8 0 6	−1.0540	.5241	+.2517	−9.3046	.9910
	13	64 Aquarii	6½	−13	−90	4 40.2	+11 37 13	−1.0079	.5227	+.2559	−9.2714	.9923
	13	70 Aquarii	6	+78	− 7	9 12.1	− 7 59 38	+0.7233	.5188	+.2603	−9.2924	.9915
	13	81 Aquarii	6	−26	−90	15 35.7	− 1 47 55	−1.2081	.5204	+.2661	−9.1340	.9959
	13	h^1 Aquarii	6	+40	−47	17 26.6	− 0 0 6	−0.0538	.5188	+.2676	−9.1678	.9952
	13	h^2 Aquarii	7	+44	−43	17 31.5	+ 0 4 17	+0.0303	0.5186	+.2676	−9.1708	9.9952

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
June 13	h^3 Aquarii	7	+59	—30	17 48.2	+ 0 20 25	+0.2939	0.5182	+.2678	—9.1799	9.9950
13	h^4 Aquarii	7½	+54	—33	18 27.6	+ 0 58 40	+0.2163	.5180	+.2686	—9.1727	.9951
13	φ Aquarii	5	+16	—76	21 59.7	+ 4 24 9	—0.5282	.5186	+.2713	—9.0744	.9969
14	96 Aquarii	5½	+ 3	—90	0 30.1	+ 6 49 54	—0.7910	.5187	+.2726	—9.0122	.9977
14	B.A.C. 8134	6½	— 9	—90	1 29.5	+ 7 47 30	—0.9850	.5188	+.2734	—8.9777	.9980
14	20 Piscium	6	+86	— 8	14 38.9	— 3 27 32	+0.7083	.5181	+.2801	—8.7922	9.9992
14	B.A.C. 8311	6½	—30	—90	18 2.1	— 0 10 42	—1.2818	.5198	+.2814	—8.0769	0.0000
14	B.A.C. 8365	6½	+85	— 7	23 5.4	+ 4 43 15	+0.7340	.5200	+.2823	—8.3541	9.9999
15	B.A.C. 57	6½	+61	—30	5 18.8	+10 44 55	+0.2922	.5218	+.2829	+8.1940	.9999
15	44 Piscium	6	+90	+14	9 1.6	— 9 39 21	+1.0825	.5235	+.2824	+8.3025	.9999
15	60 Piscium	6	+ 2	—69	19 35.5	+ 0 34 23	—0.8159	.5267	+.2811	+9.0164	.9976
15	62 Piscium	6	—28	—84	20 0.5	+ 0 58 37	—1.2650	.5267	+.2811	+9.0553	.9972
15	B.A.C. 221	6	+90	— 6	20 0.7	+ 0 58 46	+0.7346	.5284	+.2811	+8.8989	.9986
16	B.A.C. 274	6½	+90	+16	1 29.5	+ 6 16 56	+1.0887	.5314	+.2790	+8.9980	.9978
16	ε Piscium	4	+49	—39	2 57.4	+ 7 41 59	+0.0747	.5314	+.2783	+9.0933	.9966
16	π Piscium	5	+48	—38	18 40.8	— 1 6 4	+0.0577	.5418	+.2674	+9.2963	.9913
17	27 Arietis	6	+65	—20	18 6.6	— 2 29 51	+0.3446	.5626	+.2370	+9.4677	.9804
17	B.A.C. 782	6½	+15	—69	19 13.4	— 1 25 27	—0.5647	.5606	+.2354	+9.4958	.9776
17	μ Arietis	5½	— 3	—71	22 51.9	+ 2 4 55	—0.8650	.5628	+.2270	+9.5213	.9746
18	47 Arietis	6	+38	—40	5 17.7	+ 8 16 13	—0.1199	.5710	+.2168	+9.5360	.9727
18	ε Arietis	4½	+ 7	—69	5 45.4	+ 8 42 49	—0.6892	.5694	+.2157	+9.5497	.9708
18	ζ Arietis	4½	+90	+14	12 4.0	— 8 14 13	+0.8795	.5815	+.2016	+9.5446	.9715
18	τ^1 Arietis	5	+90	+45	14 34.1	— 6 49 1	+1.2604	.5854	+.1957	+9.5470	.9712
18	66 Arietis	6½	+52	—24	17 22.5	— 4 7 16	+0.1357	.5831	+.1899	+9.5794	.9662
18	7 Tauri	6	—21	—66	19 40.8	— 1 54 28	—1.0920	.5800	+.1839	+9.6090	.9608
18	9 Tauri	6	+64	—14	20 41.1	— 0 56 31	+0.3269	.5871	+.1816	+9.5872	.9649
18	*g* Pleiadum	5½	+32	—41	23 44.9	+ 2 0 3	—0.2213	.5877	+.1733	+9.6066	.9613
18	*b* Pleiadum	4½	+42	—32	23 43.0	+ 1 58 0	—0.0528	.5883	+.1731	+9.6035	.9618
18	*m* Pleiadum	7	+ 2	—63	23 48.6	+ 2 3 27	—0.7562	.5852	+.1730	+9.6159	.9594
18	ε Tauri	5	+24	—50	23 50.1	+ 2 4 52	—0.3832	.5871	+.1729	+9.6096	.9607
18	1 Pleiadum	8	+48	—26	23 55.9	+ 2 10 27	+0.0603	.5890	+.1728	+9.6022	.9621
18	2 Pleiadum	8½	+25	—48	23 58.6	+ 2 12 58	—0.3565	.5871	+.1727	+9.6096	.9607
18	3 Pleiadum	8½	+46	—28	23 59.5	+ 2 13 51	+0.0225	.5890	+.1726	+9.6031	.9620
19	4 Pleiadum	8	+32	—41	0 0.0	+ 2 14 22	—0.2260	.5878	+.1725	+9.6074	.9611
19	5 Pleiadum	9	+17	—57	0 0.8	+ 2 15 5	—0.5135	.5863	+.1725	+9.6123	.9601
19	6 Pleiadum	9	+35	—38	0 1.5	+ 2 15 46	—0.1755	.5881	+.1725	+9.6066	.9613
19	*c* Pleiadum	5	+31	—42	0 4.5	+ 2 18 37	—0.2452	.5877	+.1724	+9.6080	.9610
19	7 Pleiadum	8	+49	—25	0 5.7	+ 2 19 49	+0.0833	.5893	+.1723	+9.6022	.9621
19	B.A.C. 1155	7	+90	+23	0 5.9	+ 2 19 58	+0.9668	.5932	+.1722	+9.5865	.9650
19	*k* Pleiadum	7½	+21	—52	0 6.1	+ 2 20 14	—0.4260	.5870	+.1720	+9.6111	.9604
19	*l* Pleiadum	7½	+23	—50	0 9.4	+ 2 24 21	—0.3904	.5871	+.1718	+9.6106	.9604
19	9 Pleiadum	8½	+42	—31	0 14.3	+ 2 28 4	—0.0425	.5888	+.1716	+9.6049	.9616
19	*d* Pleiadum	5	+56	—19	0 16.6	+ 2 30 13	+0.2030	.5898	+.1715	+9.6007	.9624
19	10 Pleiadum	8	+39	—34	0 19.1	+ 2 32 40	—0.0941	.5883	+.1714	+9.6061	.9613
19	11 Pleiadum	8½	+48	—26	0 24.0	+ 2 37 24	+0.0696	.5893	+.1714	+9.6034	.9619
19	12 Pleiadum	7½	+27	—46	0 31.1	+ 2 44 8	—0.3239	.5872	+.1713	+9.6106	.9604
19	13 Pleiadum	8½	+56	—19	0 33.6	+ 2 46 33	+0.2026	.5898	+.1712	+9.6016	.9622
19	14 Pleiadum	9	+72	— 7	0 35.8	+ 2 48 24	+0.4360	.5909	+.1711	+9.5976	.9630
19	15 Pleiadum	8½	+49	—25	0 38.1	+ 2 50 56	+0.0836	.5893	+.1710	+9.6039	.9618
19	16 Pleiadum	9½	+69	— 9	0 38.6	+ 2 51 22	+0.3927	.5907	+.1709	+9.5985	.9628
19	17 Pleiadum	8	+76	— 5	0 39.1	+ 2 51 51	+0.4847	.5912	+.1708	+9.5969	.9631
19	18 Pleiadum	8	+49	—25	0 39.2	+ 2 51 57	+0.0759	.5886	+.1706	+9.6041	.9617
19	*p* Pleiadum	7½	+50	—24	0 39.9	+ 2 52 36	+0.1003	.5888	+.1704	+9.6037	.9618
19	19 Pleiadum	8	+84	0	0 40.2	+ 2 52 56	+0.5761	.5909	+.1702	+9.5953	.9634
19	20 Pleiadum	8	+25	—48	0 40.4	+ 2 53 8	—0.3659	0.5866	+.1701	+9.6118	9.9602

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
June 19	21 Pleiadum	8½	+21	—52	0 41.4	+ 2 54 1	—0.4310	0.5865	+.1700	+9.6129	9.9600
19	22 Pleiadum	8	+63	—14	0 41.4	+ 2 54 3	+0.3013	.5898	+.1699	+9.6002	.9625
19	23 Pleiadum	8½	+81	— 2	0 42.6	+ 2 55 15	+0.5414	.5909	+.1698	+9.5960	.9633
19	24 Pleiadum	8	+41	—32	0 42.9	+ 2 55 30	—0.0619	.5882	+.1697	+9.6067	.9612
19	η Tauri	3	+51	—23	0 42.9	+ 2 55 33	+0.1201	.5890	+.1696	+9.6035	.9618
19	25 Pleiadum	8½	+88	+ 2	0 46.4	+ 2 58 53	+0.6198	.5915	+.1695	+9.5948	.9635
19	26 Pleiadum	9	+90	+ 6	0 48.8	+ 3 1 9	+0.6922	.5919	+.1694	+9.5937	.9637
19	27 Pleiadum	8½	+42	—31	0 59.7	+ 3 11 38	—0.0460	.5891	+.1693	+9.6072	.9611
19	28 Pleiadum	7	+90	+15	1 3.6	+ 3 15 23	+0.8527	.5935	+.1692	+9.5916	.9641
19	29 Pleiadum	8	+41	—32	1 6.0	+ 3 17 40	—0.0567	.5897	+.1691	+9.6077	.9611
19	*s* Pleiadum	7½	+74	— 6	1 16.8	+ 3 27 59	+0.4574	.5917	+.1690	+9.5992	.9627
19	*f* Pleiadum	4½	+61	—15	1 21.6	+ 3 32 35	+0.2752	.5911	+.1689	+9.6027	.9620
19	*h* Pleiadum	5½	+56	—19	1 22.0	+ 3 33 0	+0.1994	.5907	+.1689	+9.6042	.9617
19	30 Pleiadum	8½	+73	— 7	1 22.7	+ 3 33 41	+0.4427	.5919	+.1687	+9.5998	.9626
19	31 Pleiadum	8	+41	—32	1 23.8	+ 3 34 45	—0.0584	.5896	+.1685	+9.6086	.9609
19	32 Pleiadum	8	+42	—31	1 25.7	+ 3 36 36	—0.0383	.5897	+.1683	+9.6084	.9609
19	33 Pleiadum	8½	+50	—24	1 27.5	+ 3 38 18	+0.0986	.5902	+.1681	+9.6061	.9613
19	34 Pleiadum	7½	+90	+ 5	1 34.9	+ 3 45 2	+0.6586	.5931	+.1679	+9.5968	.9631
19	35 Pleiadum	9	+52	—22	1 35.2	+ 3 45 42	+0.1323	.5908	+.1678	+9.6060	.9614
19	36 Pleiadum	9	+54	—21	1 38.6	+ 3 48 56	+0.1667	.5909	+.1677	+9.6056	.9615
19	37 Pleiadum	8	+47	—27	1 39.1	+ 3 49 24	+0.0369	.5902	+.1676	+9.6078	.9610
19	38 Pleiadum	8	+80	— 2	1 40.3	+ 3 50 33	+0.5345	.5927	+.1675	+9.5992	.9627
19	B.A.C. 1192	6½	—28	—65	1 46.1	+ 3 57 5	—1.1677	.5847	+.1674	+9.6283	.9567
19	39 Pleiadum	8	+40	—33	1 50.9	+ 4 0 43	—0.0828	.5900	+.1672	+9.6103	.9605
19	40 Pleiadum	7½	+75	— 5	2 0.9	+ 4 10 17	+0.4713	.5926	+.1670	+9.6012	.9623
19	36 Tauri	6½	+90	+35	7 7.6	+ 9 4 23	+1.1062	.5997	+.1527	+9.6044	.9617
19	*p* Tauri	6	— 8	—64	9 30.3	+11 21 14	—0.9100	.5920	+.1455	+9.6435	.9533
19	χ Tauri	5½	+79	0	13 53.8	— 8 26 20	+0.5101	.6025	+.1320	+9.6306	.9563
22	ι Geminor.	4	—12	—62	8 25.2	+ 7 12 59	—0.9357	.5904	—.0936	+9.6728	.9456
22	b^2 Geminor.	5½	—38	—62	9 57.4	+ 8 41 24	—1.2143	.5883	—.0982	+9.6746	.9451
22	B.A.C. 2472	6	—43	—62	10 16.7	+ 8 59 53	—1.2477	.5881	—.0988	+9.6746	.9451
22	υ Geminor.	5	+19	—47	12 18.4	+10 56 33	—0.4488	.5905	—.1059	+9.6602	.9490
22	*c* Geminor.	6	+64	— 9	15 28.3	—10 1 15	+0.3081	.5877	—.1149	+9.6438	.9532
22	φ Geminor.	5	—29	—63	19 5.3	— 6 33 0	—1.1498	.5803	—.1248	+9.6590	.9494
22	ω^1 Cancri	6	+36	—34	22 4.5	— 3 40 49	—0.1588	.5824	—.1329	+9.6385	.9545
22	ω^2 Cancri	6½	+50	—21	22 21.4	— 3 24 45	+0.1050	.5836	—.1332	+9.6340	.9555
23	ψ^1 Cancri	6½	—28	—64	1 42.2	— 0 11 51	—1.1559	.5746	—.1429	+9.6460	.9527
23	ψ^2 Cancri	4	— 4	—64	1 48.5	— 0 5 46	—0.8414	.5757	—.1432	+9.6409	.9539
23	λ Cancri	6	+48	—25	5 53.5	+ 3 49 40	+0.0500	.5755	—.1537	+9.6172	.9591
23	υ^1 Cancri	7	— 6	—65	8 22.5	+ 6 13 9	—0.8811	.5693	—.1590	+9.6259	.9573
23	υ^2 Cancri	6½	+10	—62	9 10.8	+ 6 59 26	—0.6178	.5692	—.1613	+9.6197	.9586
23	B.A.C. 2840	7	— 6	—65	9 36.6	+ 7 24 13	—0.8931	.5671	—.1625	+9.6230	.9579
23	υ^3 Cancri	6	+ 3	—63	10 22.5	+ 8 8 23	—0.7558	.5665	—.1649	+9.6187	.9588
23	γ Cancri	4½	+90	+27	15 19.5	—11 5 33	+1.0457	.5696	—.1748	+9.5733	.9672
25	34 Leonis	6	+90	+ 4	7 26.1	+ 3 38 21	+0.8274	.5246	—.2400	+9.3855	.9868
25	37 Leonis	6	+36	—48	9 54.2	+ 6 1 56	—0.1672	.5206	—.2419	+9.3968	.9861
26	*l* Leonis	5	— 6	—79	2 22.7	— 1 59 34	—0.9486	.5066	—.2547	+9.2921	.9915
26	χ Leonis	5	+63	—26	10 40.4	+ 6 3 33	+0.3230	.5020	—.2597	+9.1493	.9956
26	σ Leonis	4	+18	—74	19 15.4	— 9 36 10	—0.5291	.4965	—.2625	+9.0741	.9969
27	89 Leonis	6	+90	— 5	2 26.9	— 2 36 48	+0.7626	.4933	—.2643	+8.8273	.9990
27	β Virginis	3½	+34	—55	11 20.2	+ 6 1 49	—0.2014	.4903	—.2652	+8.6514	.9996
27	B.A.C. 4043	6½	+39	—50	16 2.4	+10 36 18	—0.0993	.4891	—.2650	+8.3638	.9999
28	B.A C. 4200	6½	+86	+28	8 8.4	+ 2 16 9	+1.2639	.4854	—.2624	+8.8242	.9990
28	B.A.C. 4225	6½	+86	+22	10 15.6	+ 4 19 58	+1.1896	.4851	—.2620	+8.8715	.9988
28	*f* Virginis	6	+85	+29	13 9.1	+ 7 8 44	+1.2718	0.4849	—.2611	+8.9444	9.9983

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			Northern.	Southern.		H	Y	p′	q′	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
June 28	B.A.C. 4255	6½	+14	—81	14 14.7	+ 8 12 37	—0.5926	0.4857	—.2605	—8.7965	9.9992
28	B.A.C. 4294	6½	+57	—32	19 11.8	—10 58 20	+0.2414	.4851	—.2585	—8.9833	.9980
29	B.A.C. 4394	5½	+54	—34	6 56.9	+ 0 27 50	+0.2034	.4870	—.2527	—9.1554	.9955
29	58 Virginis	6	+80	— 9	11 54.8	+ 5 17 36	+0.6922	.4867	—.2496	—9.2309	.9936
29	α Virginis	1	+59	—28	16 12.1	+ 9 27 55	+0.3139	.4879	—.2468	—9.2572	.9928
30	B.A.C. 4531	6	+79	+36	21 25.4	— 9 27 17	+1.3177	.4873	—.2430	—9.3348	.9896
30	86 Virginis	6	—14	—90	3 36.6	— 3 26 19	—1.0203	.4941	—.2375	—9.3075	.9909
30	B.A.C. 4679	6½	+14	—75	13 36.8	+ 6 17 6	—0.5031	.4973	—.2279	—9.3923	.9864
30	B.A.C. 4700	5½	+50	—33	17 0.6	+ 9 35 12	+0.2158	.4973	—.2242	—9.4304	.9836
July 1	B.A.C. 4923	6	+70	+ 3	17 6.2	+ 8 57 41	+0.8567	.5086	—.1935	—9.5497	.9708
2	B.A.C. 5023	6	+48	—28	2 39.2	— 5 45 48	+0.3035	.5168	—.1796	—9.5712	.9676
2	42 Libræ	5½	+29	—46	14 17.0	+ 5 30 13	—0.0216	.5253	—.1585	—9.5982	.9629
2	B.A C. 5197	6	+60	—13	16 55.2	+ 8 3 19	+0.5789	.5252	—.1532	—9.6138	.9598
2	A Scorpii	5	+65	— 4	20 36.6	+11 37 37	+0.7252	.5270	—.1461	—9.6243	.9576
2	B.A.C. 5253	6	+20	—55	20 45.9	+11 46 39	—0.1737	.5307	—.1458	—9.6111	.9604
2	B.A.C. 5254	6	—13	—90	20 46.8	+11 47 28	—0.7925	.5329	—.1458	—9.6016	.9622
2	B.A.C. 5255	6	+66	— 1	20 53.3	+11 53 48	+0.7792	.5269	—.1458	—9.6257	.9573
2	3 Scorpii	6	+59	—13	21 6.4	—11 53 30	+0.5664	.5281	—.1448	—9.6231	.9579
2	B.A.C. 5286	6½	+21	—53	22 58.2	—10 5 20	—0.1366	.5320	—.1414	—9.6165	.9593
2	π Scorpii	3½	+66	+41	23 3.8	— 9 59 59	+1.2584	.5267	—.1412	—9.6372	.9548
3	B.A.C. 5314	6	+65	— 5	1 11.0	— 7 56 53	+0.7034	.5300	—.1371	—9.6335	.9556
3	B.A.C. 5347	5	+64	+10	3 23.4	— 5 48 48	+0.9318	.5310	—.1319	—9.6410	.9538
3	σ Scorpii	3½	— 5	—87	9 27.8	+ 0 3 31	—0.6001	.5407	—.1197	—9.6300	.9564
3	α Scorpii	1½	+21	—49	13 12.0	+ 3 40 11	—0.0774	.5410	—.1114	—9.6437	.9532
4	B.A.C. 5800	6½	—39	—90	9 11.9	— 1 1 21	—1.0593	.5566	—.0633	—9.6542	.9506
4	43 Ophiuchi	6	+20	—44	13 9.1	+ 2 47 39	+0.0158	.5536	—.0529	—9.6716	.9459
4	3 Sagittarii	5	—17	—90	23 38.3	—11 5 51	—0.6420	.5610	—.0249	—9.6684	.9469
5	B.A.C. 6063	6½	— 7	—73	3 33.5	— 7 19 7	—0.4279	.5612	—.0145	—9.6722	.9457
5	B.A.C. 6072	6½	+32	—26	4 22.1	— 6 32 18	+0.3192	.5572	—.0124	—9.6819	.9429
5	γ^1 Sagittarii	4	+61	+41	7 4.3	— 3 55 58	+1.2182	.5536	—.0048	—9.6935	.9393
5	B.A.C. 6120	6½	+ 9	—51	7 51.4	— 3 10 30	—0.1059	.5604	—.0030	—9.6769	.9444
5	B.A.C. 6127	5	+14	—45	8 24.6	— 2 38 31	+0.0005	.5600	—.0015	—9.6782	.9440
5	B.A.C 6190	6½	+29	—30	12 22.6	+ 1 10 47	+0.2625	.5593	+.0094	—9.6814	.9431
5	B.A C. 6191	6½	+ 8	—53	12 22.8	+ 1 11 1	—0.1362	.5612	+.0094	—9.6763	.9446
5	B.A.C. 6220	6½	+19	—41	14 20.8	+ 3 4 41	+0.0676	.5607	+.0148	—9.6786	.9439
6	φ Sagittarii	3½	—45	—90	0 26.9	—11 11 20	—1.1150	.5672	+.0424	—9.6590	.9494
6	τ Sagittarii	3½	+30	—34	9 29.7	— 2 28 17	+0.1852	.5602	+.0671	—9.6698	.9464
6	B.A.C. 6628	6	+62	+20	16 59.5	+ 4 45 5	+1.0462	.5551	+.0873	—9.6736	.9454
6	B.A.C. 6666	6	+40	—26	19 18.8	+ 6 59 25	+0.3284	.5579	+.0935	—9.6611	.9488
7	ω Sagittarii	5½	+64	+ 7	6 32.0	— 6 11 35	+0.8940	.5524	+.1226	—9.6522	.9512
7	A Sagittarii	5	+64	+12	7 54.2	— 4 52 24	+0.9600	.5514	+.1255	—9.6507	.9515
8	B.A.C. 7049	6	—23	—90	21 26.0	+ 8 10 48	—0.9097	.5543	+.1260	—9.5894	.9645
8	17 Capricor.	6	—11	—90	4 53.4	— 8 37 22	—0.7312	.5493	+.1383	—9.5741	.9671
8	B.A.C. 7197	6	+67	— 4	5 50.9	— 7 41 49	+0.7376	.5442	+.1743	—9.5964	.9632
8	η Capricor.	5½	—16	—90	13 11.1	— 0 36 38	—0.9240	.5457	+.1912	—9.5426	.9718
8	χ Capricor.	6	+68	+ 3	15 3.2	+ 1 11 47	+0.8612	.5386	+.1945	—9.5691	.9679
8	27 Capricor.	6	+48	—30	15 30.7	+ 1 38 15	+0.2762	.5401	+.1953	—9.5569	.9698
8	φ Capricor.	6	+69	+ 9	18 18.7	+ 4 20 31	+0.9511	.5370	+.2008	—9.5590	.9695
9	γ Capricor.	3½	— 5	—90	5 44.6	— 8 36 20	—0.7887	.5369	+.2201	—9.4734	.9799
9	δ Capricor.	3	+ 6	—86	9 1.1	— 5 26 6	—0.6164	.5346	+.2260	—9.4602	.9811
9	ι Aquarii	4½	— 1	—90	18 17.7	+ 3 32 14	—0.7768	.5306	+.2392	—9.4003	.9858
9	42 Aquarii	6	+ 8	—86	23 17.9	+ 8 22 52	—0.6287	.5279	+.2458	—9.3694	.9878
10	45 Aquarii	6	+46	—38	0 21.4	+ 9 24 23	+0.1279	.5234	+.2471	—9.4134	.9849
10	50 Aquarii	6	+76	+10	2 59.4	+11 57 19	+1.0072	.5229	+.2501	—9.3912	.9864
10	B.A.C. 7835	6½	+77	+15	5 42.9	— 9 24 20	+1.0726	0.5220	+.2533	—9.3726	9.9876

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
July 10	σ Aquarii	4½	−25	−90	6 2.3	− 9 5 31	−1.1747	0.5261	+.2536	−9.2960	9.9913
10	64 Aquarii	6½	+ 2	−90	10 15.5	− 5 0 19	−0.7588	.5240	+.2578	−9.2714	.9923
10	70 Aquarii	6	+79	+ 8	14 46.7	− 0 37 36	+0.9782	.5200	+.2627	−9.2924	.9915
10	81 Aquarii	6	− 7	−90	21 10.1	+ 5 23 50	−0.9463	.5209	+.2678	−9.1340	.9959
10	82 Aquarii	6	−34	−90	21 44.3	+ 6 6 56	−1.2981	.5211	+.2683	−9.1062	.9964
10	h^1 Aquarii	6	+54	−34	23 1.0	+ 7 21 20	+0.2111	.5190	+.2690	−9.1677	.9952
10	h^2 Aquarii	7	+59	−29	23 5.9	+ 7 26 14	+0.2954	.5190	+.2691	−9.1707	.9952
10	h^3 Aquarii	7	+75	−16	23 22.6	+ 7 42 14	+0.5597	.5185	+.2693	−9.1799	.9950
11	h^4 Aquarii	7½	+70	−20	0 2.1	+ 8 20 30	+0.4842	.5186	+.2698	−9.1676	.9953
11	φ Aquarii	5	+30	−59	3 34.4	+11 46 17	−0.2603	.5187	+.2724	−9.0743	.9969
11	96 Aquarii	5½	+17	−76	6 5.1	− 9 47 42	−0.5202	.5187	+.2739	−9.0121	.9977
11	B.A.C. 8134	6½	+ 7	−90	7 4.7	− 8 39 59	−0.7139	.5188	+.2744	−8.9776	.9980
11	20 Piscium	6	+87	+ 9	20 17.8	+ 3 58 41	+0.9977	.5190	+.2744	−8.7921	.9992
11	B.A.C. 8276	6½	−21	−90	20 44.9	+ 4 25 3	−1.1610	.5198	+.2747	−8.3690	9.9999
11	B.A.C. 8311	6½	− 9	−90	23 42.5	+ 7 17 5	−1.0030	.5181	+.2809	+8.0760	0.0000
12	B.A.C. 8365	6½	+89	+12	4 48.4	−11 46 24	+1.0588	.5181	+.2816	−8.3536	9.9999
12	B.A.C. 57	6½	+80	−15	11 5.7	− 5 40 49	+0.5812	.5188	+.2816	+8.1948	.9999
13	60 Piscium	6	+17	−75	1 33.9	+ 8 20 16	−0.5381	.5228	+.2787	+9.0166	.9976
13	62 Piscium	6	− 8	−84	1 59.4	+ 8 44 54	−0.9910	.5226	+.2787	+9.0554	.9972
13	B.A.C. 221	6	+90	+11	1 59.6	+ 8 45 3	+1.0231	.5244	+.2787	+8.8994	.9986
13	δ Piscium	5	−20	−83	2 10.8	+ 8 55 59	−1.2298	.5224	+.2787	+9.0740	.9969
13	ε Piscium	4	+65	−25	9 3.4	− 8 24 34	+0.3570	.5265	+.2752	+9.0934	.9966
14	π Piscium	5	+63	−25	1 5.8	+ 7 6 28	+0.3261	.5361	+.2633	+9.2964	.9913
15	27 Arietis	6	+83	− 7	1 6.5	+ 6 17 39	+0.5844	.5551	+.2325	+9.4677	.9804
15	B.A.C. 782	6½	+27	−54	2 15.1	+ 7 23 47	−0.3391	.5533	+.2305	+9.4958	.9776
15	μ Arietis	5½	+10	−70	5 59.4	+11 0 1	−0.6506	.5556	+.2231	+9.5214	.9746
15	47 Arietis	6	+50	−29	12 35.9	− 6 38 1	+0.0928	.5633	+.2117	+9.5360	.9727
15	ε Arietis	4½	+19	−60	13 4.3	− 6 10 39	+0.4851	.5619	+.2106	+9.5497	.9708
15	ζ Arietis	4½	+90	+28	19 33.5	+ 0 4 0	+1.0933	.5731	+.1954	+9.5446	.9715
16	66 Arietis	6½	+64	−15	1 1.0	+ 5 19 1	+0.3283	.5754	+.1845	+9.5794	.9662
16	7 Tauri	6	− 8	−66	3 23.2	+ 7 35 43	−0.9215	.5720	+.1791	+9.6090	.9608
16	9 Tauri	6	+78	− 4	4 25.3	+ 8 35 24	+0.5147	.5789	+.1763	+9.5872	.9649
16	*g* Pleiadum	5½	+41	−32	7 30.4	+11 33 18	−0.0591	.5792	+.1688	+9.6066	.9613
16	*b* Pleiadum	4½	+52	−23	7 32.3	+11 35 4	+0.1228	.5799	+.1688	+9.6035	.9618
16	*m* Pleiadum	7	+12	−61	7 38.1	+11 40 40	−0.5905	.5768	+.1687	+9.6159	.9574
16	ε Tauri	5	+33	−40	7 39.7	+11 42 10	−0.2123	.5788	+.1686	+9.6096	.9607
16	1 Pleiadum	8	+59	−17	7 45.7	+11 47 57	+0.2375	.5808	+.1685	+9.6022	.9621
16	2 Pleiadum	8½	+34	−39	7 48.4	+11 50 30	−0.1855	.5789	+.1684	+9.6096	.9607
16	3 Pleiadum	8½	+56	−19	7 49.4	+11 51 28	+0.1990	.5807	+.1683	+9.6030	.9620
16	4 Pleiadum	8	+42	−32	7 49.9	+11 51 57	−0.0531	.5795	+.1682	+9.6074	.9611
16	5 Pleiadum	9	+26	−47	7 50.4	+11 52 28	−0.3447	.5781	+.1681	+9.6123	.9601
16	6 Pleiadum	9	+44	−29	7 51.4	+11 53 23	−0.0020	.5797	+.1680	+9.6066	.9613
16	*c* Pleiadum	5	+41	−33	7 54.5	+11 56 21	−0.0728	.5795	+.1679	+9.6080	.9610
16	7 Pleiadum	8	+60	−16	7 55.7	+11 57 32	+0.2604	.5809	+.1678	+9.6023	.9621
16	B.A.C. 1155	7	+90	+37	7 55.9	+11 57 42	+1.1564	.5850	+.1677	+9.5865	.9650
16	*k* Pleiadum	7½	+30	−42	7 56.2	+11 58 0	−0.2650	.5788	+.1678	+9.6111	.9606
16	*l* Pleiadum	7½	+32	−40	7 59.5	−11 58 48	−0.2202	.5789	+.1677	+9.6107	.9604
16	9 Pleiadum	8½	+52	−22	8 5.1	−11 53 24	+0.1340	.5807	+.1676	+9.6049	.9616
16	*d* Pleiadum	5	+68	−10	8 6.9	−11 51 43	+0.3814	.5819	+.1675	+9.6007	.9624
16	10 Pleiadum	8	+49	−25	8 9.5	−11 49 13	+0.0802	.5804	+.1674	+9.6061	.9613
16	11 Pleiadum	8½	+59	−17	8 14.5	−11 44 27	+0.2443	.5812	+.1673	+9.6034	.9618
16	12 Pleiadum	7½	+36	−37	8 21.8	−11 37 24	−0.1533	.5795	+.1672	+9.6106	.9604
16	13 Pleiadum	8½	+68	−10	8 24.4	−11 34 56	+0.3799	.5820	+.1671	+9.6016	.9622
16	14 Pleiadum	9	+88	+ 2	8 26.7	−11 32 41	+0.6165	.5831	+.1670	+9.5976	.9630
16	15 Pleiadum	8½	+60	− 16	8 29.1	−11 30 25	+0.2590	0.5816	+.1669	+9.6039	9.9618

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
July 16	16 Pleiadum	9½	+84	0	8 29.5	—11 29 59	+0.5726	0.5830	+.1668	+9.5985	9.9628
16	17 Pleiadum	8	+90	+ 5	8 30.1	—11 29 28	+0.6658	.5833	+.1667	+9.5969	.9631
16	18 Pleiadum	8	+60	—16	8 30.2	—11 29 18	+0.2513	.5815	+.1666	+9.6041	.9617
16	*p* Pleiadum	7½	+61	—15	8 30.9	—11 28 41	+0.2759	.5817	+.1665	+9.6037	.9618
16	19 Pleiadum	8	+90	+10	8 31.2	—11 28 20	+0.7583	.5839	+.1664	+9.5953	.9634
16	20 Pleiadum	8	+34	—39	8 31.4	—11 28 8	—0.1967	.5796	+.1663	+9.6118	.9602
16	21 Pleiadum	8½	+30	—43	8 32.4	—11 27 12	—0.2623	.5793	+.1663	+9.6129	.9600
16	22 Pleiadum	8	+76	— 5	8 32.4	—11 27 11	+0.4802	.5827	+.1661	+9.6002	.9625
16	23 Pleiadum	8½	+90	+ 8	8 33.7	—11 25 58	+0.7236	.5838	+.1659	+9.5960	.9633
16	24 Pleiadum	8	+51	—23	8 33.9	—11 25 43	+0.1119	.5811	+.1657	+9.6064	.9613
16	*η* Tauri	3	+62	—14	8 34.0	—11 25 38	+0.2960	.5817	+.1655	+9.6035	.9618
16	25 Pleiadum	8½	+90	+13	8 37.6	—11 22 12	+0.8028	.5840	+.1653	+9.5948	.9635
16	26 Pleiadum	9	+90	+17	8 40.0	—11 19 54	+0.8765	.5844	+.1651	+9.5937	.9637
16	27 Pleiadum	8½	+52	—23	8 51.3	—11 9 6	+0.1276	.5812	+.1649	+9.6072	.9611
16	28 Pleiadum	7	+90	+28	8 55.3	—11 5 14	+1.0388	.5854	+.1647	+9.5916	.9641
16	29 Pleiadum	8	+51	—23	8 57.7	—11 3 2	+0.1174	.5813	+.1646	+9.6077	.9611
16	*s* Pleiadum	7½	+90	+ 4	9 8.8	—10 52 14	+0.6360	.5838	+.1645	+9.5992	.9627
16	*f* Pleiadum	4½	+73	— 6	9 13.7	—10 47 30	+0.4524	.5830	+.1644	+9.6027	.9620
16	*h* Pleiadum	5½	+67	—10	9 14.2	—10 47 5	+0.3702	.5825	+.1643	+9.6042	.9617
16	30 Pleiadum	8½	+89	+ 3	9 14.9	—10 46 24	+0.6226	.5844	+.1642	+9.5998	.9626
16	31 Pleiadum	8	+51	—23	9 16.0	—10 45 18	+0.1142	.5816	+.1641	+9.6086	.9609
16	32 Pleiadum	8	+52	—22	9 18.0	—10 43 26	+0.1344	.5817	+.1640	+9.6054	.9609
16	33 Pleiadum	8½	+61	—15	9 19.9	—10 41 32	+0.2744	.5811	+.1639	+9.6061	.9613
16	34 Pleiadum	7½	+90	+14	9 27.3	—10 34 30	+0.8300	.5841	+.1638	+9.5968	.9631
16	35 Pleiadum	9	+63	—14	9 27.7	—10 34 9	+0.2967	.5819	+.1637	+9.6060	.9614
16	36 Pleadium	9	+65	—12	9 31.2	—10 30 45	+0.3331	.5827	+.1636	+9.6056	.9615
16	37 Pleiadum	8	+57	—19	9 31.7	—10 30 16	+0.2020	.5820	+.1636	+9.6078	.9610
16	38 Pleiadum	8	+90	+ 7	9 33.0	—10 29 2	+0.7073	.5843	+.1635	+9.5991	.9627
16	B.A.C. 1192	6½	+15	—65	9 38.9	—10 23 21	—1.0514	.5769	+.1634	+9.6283	.9567
16	39 Pleiadum	8	+50	—24	9 43.9	—10 18 34	—0.0888	.5824	+.1632	+9.6103	.9605
16	40 Pleiadum	7½	+90	+ 5	9 54.1	—10 8 42	+0.6500	.5851	+.1627	+9.6012	.9623
16	*p* Tauri	6	+ 1	—64	17 36.3	— 2 45 2	—0.7672	.5877	+.1414	+9.6435	.9533
16	*φ* Tauri	5	+31	—63	21 13.6	+ 0 43 27	+1.1768	.5840	+.1310	+9.6571	.9499
16	*χ* Tauri	5½	+90	+ 9	22 6.9	+ 1 34 31	+0.6620	.5943	+.1288	+9.6306	.9563
17	B.A.C. 1648	6½	+56	— 9	19 51.3	— 1 35 36	+0.1917	.6037	+.0597	+9.6687	.9467
17	*β* Tauri	2	+23	—39	21 46.9	+ 0 15 58	—0.3772	.6007	+.0530	+9.6784	.9440
17	B.A.C. 1709	6½	+ 9	—61	23 0.5	+ 1 25 33	—0.9031	.5978	+.0485	+9.6865	.9415
18	B.A.C. 1746	6½	+90	+19	1 20.4	+ 3 39 31	+0.7105	.6075	+.0408	+9.6654	.9477
18	B.A.C. 1772	6	— 3	—61	2 32.1	+ 4 48 8	—0.8140	.5993	+.0369	+9.6874	.9413
18	136 Tauri	5	+90	+32	7 42.3	+ 9 54 4	+0.8936	.6093	+.0190	+9.6655	.9476
18	B.A.C. 1882	6½	+20	—40	8 51.2	+10 50 56	—0.4354	.6020	+.0151	+9.6844	.9422
18	*κ* Aurigæ	4	—20	—61	15 43.6	— 4 34 18	—1.0494	.5897	—.0084	+9.6930	.9335
22	34 Leonis	6	+87	— 7	16 53.6	— 9 6 4	+0.6395	.5282	—.2436	+9.3855	.9868
23	37 Leonis	6	+26	—59	18 54.6	— 7 9 43	—0.3558	.5241	—.2454	+9.3968	.9861
23	*l* Leonis	5	—21	—79	11 36.2	+ 9 1 52	—1.1647	.5100	—.2591	+9.2921	.9915
23	*χ* Leonis	5	+49	—39	19 46.9	— 7 22 0	+0.0854	.5066	—.2632	+9.1493	.9956
24	*σ* Leonis	4	+ 5	—77	4 14.4	+ 1 10 48	—0.7750	.5007	—.2665	+9.0741	.9969
24	89 Leonis	6	+74	—19	11 19.4	+ 8 3 39	+0.4988	.4982	—.2678	+8.8273	.9990
24	*β* Virginis	3½	+21	—72	20 4.7	— 7 29 43	—0.4698	.4942	—.2683	+8.6514	.9996
25	B.A.C. 4043	6½	+26	—66	0 42.7	— 2 55 30	—0.3735	.4929	—.2680	+8.3640	.9999
25	B.A.C. 4200	6½	+86	+ 7	16 34.8	—11 29 35	+0.9697	.4888	—.2651	—8.8242	.9990
25	B.A.C. 4255	6½	+86	+ 2	18 40.4	— 9 27 28	+0.8950	.4886	—.2644	—8.8714	.9988
25	*f* Virginis	6	+85	+ 8	21 31.5	— 6 41 4	+0.9941	.4884	—.2632	—8.9444	.9983
25	B.A.C. 4255	6½	— 2	—90	22 36.2	— 5 38 4	—0.8787	.4894	—.2629	—8.7965	.9992
26	B.A.C. 4294	6½	+41	—47	3 29.5	— 0 52 48	—0.0514	0.4888	—.2607	—8.9832	9.9980

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
July 26	B.A.C. 4394	5½	+38	−49	15 6.3	+10 25 2	−0.0910	0.4893	−.2541	−9.1553	9.9955
26	50 Virginis	6	+81	+25	15 45.8	+11 3 25	+1.2196	.4878	−.2542	−9.2207	.9939
26	58 Virginis	6	+64	−24	20 1.0	− 8 48 20	+0.3962	.4891	−.2509	−9.2309	.9936
27	α Virginis	1	+43	−44	0 15.8	− 4 40 35	+0.0202	.4907	−.2475	−9.2572	.9928
27	B.A.C. 4531	6	+78	+11	5 26.3	+ 0 21 19	+1.0215	.4904	−.2433	−9.3348	.9896
27	86 Virginis	6	−40	−90	11 34.3	+ 6 19 11	−1.3229	.4957	−.2381	−9.3075	.9909
27	B.A.C. 4679	6½	− 2	−90	21 29.7	− 8 2 12	−0.7842	.4942	−.2247	−9.3923	.9864
28	B.A.C. 4700	5½	+35	−48	0 53.1	− 4 44 32	−0.0650	.4989	−.2239	−9.4304	.9836
29	B.A.C. 4923	6	+66	−13	0 53.6	− 5 26 12	+0.5986	.5094	−.1924	−9.5497	.9708
29	B.A.C. 5023	6	+35	−42	10 25.9	+ 3 48 42	+0.0547	.5167	−.1770	−9.5712	.9676
29	42 Libræ	5½	+17	−59	22 3.8	− 8 55 13	−0.2502	.5250	−.1566	−9.5982	.9629
30	B.A C. 5197	6	+48	−25	0 42.1	− 6 22 3	+0.3538	.5245	−.1519	−9.6138	.9598
30	*b* Scorpii	5	+65	+27	3 8.0	− 4 0 49	+1.1495	.5224	−.1469	−9.6311	.9561
30	A Scorpii	5	+55	−17	4 23.7	− 2 47 34	+0.5059	.5263	−.1442	−9.6243	.9576
30	B.A.C. 5253	6	+ 8	−69	4 33.0	− 2 38 30	−0.3924	.5298	−.1439	−9.6112	.9603
30	B.A.C. 5254	6	−27	−90	4 35.9	− 2 35 39	−1.0107	.5322	−.1441	−9.6016	.9622
30	B.A.C. 5255	6	+58	−14	4 40.4	− 2 31 22	+0.5601	.5262	−.1441	−9.6257	.9573
30	3 Scorpii	6	+46	−26	4 53.7	− 2 18 27	+0.3477	.5272	−.1435	−9.6231	.9579
30	B.A.C. 5286	6½	+10	−67	6 45.5	− 0 30 21	−0.3517	.5310	−.1395	−9.6165	.9593
30	π Scorpii	3½	+65	+18	6 51.0	− 0 25 2	+1.0424	.5258	−.1392	−9.6372	.9548
30	B.A.C. 5314	6	+54	−18	8 58.4	+ 1 38 17	+0.4906	.5292	−.1349	−9.6335	.9556
30	B.A.C. 5347	5	+64	− 4	11 11.1	+ 3 46 33	+0.7223	.5294	−.1308	−9.6410	.9538
30	σ Scorpii	3½	−16	−90	17 16.1	+ 9 39 28	−0.7993	.5397	−.1175	−9.6300	.9564
30	α Scorpii	1½	+11	−61	21 0.6	−10 43 31	−0.2704	.5399	−.1095	−9.6437	.9532
31	B.A.C. 5800	6½	−55	−90	17 2.0	+ 8 36 27	−1.2348	.5591	−.0615	−9.6542	.9506
31	43 Ophiuchi	6	+16	−49	19 41.3	+11 10 8	−0.0672	.5519	−.0547	−9.6716	.9459
Aug. 1	3 Sagittarii	5	−24	−90	7 29.5	− 1 26 50	−0.7738	.5599	−.0239	−9.6684	.9469
1	B.A.C. 6063	6½	−13	−84	11 24.7	+ 2 19 54	−0.5524	.5603	−.0130	−9.6722	.9457
1	B.A.C. 6072	6½	+25	−34	12 13.3	+ 3 6 43	+0.1947	.5570	−.0106	−9.6819	.9429
1	γ^1 Sagittarii	4	+61	+26	14 55.5	+ 5 43 1	+1.0970	.5530	−.0033	−9.6935	.9393
1	B.A.C. 6120	6½	+ 2	−58	15 42.6	+ 6 28 27	−0.2233	.5597	−.0008	−9.6769	.9444
1	B.A.C. 6127	5	+ 8	−52	16 15.8	+ 7 0 23	−0.1166	.5612	+.0006	−9.6782	.9440
1	B.A.C 6190	6½	+23	−36	20 13.5	+10 49 27	+0.1531	.5608	+.0118	−9.6814	.9431
1	B.A C. 6191	6½	+ 3	−60	20 13.8	+10 49 40	−0.2459	.5628	+.0118	−9.6763	.9446
1	B.A.C. 6220	6½	+14	−47	22 11.5	−11 16 50	−0.0384	.5606	+.0169	−9.6784	.9440
2	φ Sagittarii	3½	−52	−90	8 16.3	− 1 34 9	−1.1979	.5673	+.0447	−9.6590	.9494
2	τ Sagittarii	3½	+26	−38	17 17.2	+ 7 6 56	+0.1161	.5610	+.0696	−9.6696	.9465
3	B.A.C. 6628	6	+62	+15	0 44.6	− 9 42 2	+0.9882	.5561	+.0899	−9.6736	.9454
3	B.A.C. 6666	6	+37	−29	3 3.1	− 7 28 35	+0.2776	.5592	+.0958	−9.6611	.9488
3	ω Sagittarii	5½	+64	+ 5	14 11.4	+ 3 15 32	+0.8628	.5543	+.1246	−9.6519	.9512
3	A Sagittarii	5	+64	+10	15 33.0	+ 4 34 8	+0.9318	.5533	+.1284	−9.6507	.9515
4	B.A.C. 7049	6	−30	−90	4 56.9	− 6 30 41	−1.0760	.5571	+.1602	−9.5894	.9645
4	17 Capricor.	6	− 5	−90	12 19.0	+ 0 35 53	−0.7057	.5525	+.1773	−9.5741	.9671
4	B.A.C. 7191	6	+65	− 3	13 15.8	+ 1 30 43	+0.7550	.5466	+.1796	−9.5964	.9632
4	η Capricor.	5½	−13	−90	20 30.3	+ 8 30 9	−0.8797	.5492	+.1947	−9.5426	.9718
4	χ Capricor.	6	+68	+ 5	22 20.8	+10 16 53	+0.8975	.5424	+.1978	−9.5691	.9679
4	27 Capricor.	6	+50	−28	22 48.0	+10 43 7	+0.3170	.5444	+.1990	−9.5568	.9698
5	φ Capricor.	6	+69	+12	1 33.5	−10 36 59	+0.9936	.5409	+.2010	−9.5590	.9695
5	γ Capricor.	3½	0	−90	12 49.1	+ 0 15 43	−0.7096	.5410	+.2244	−9.4734	.9799
5	δ Capricor.	3	+10	−78	16 2.4	+ 3 22 38	−0.5318	.5387	+.2300	−9.4602	.9811
6	ι Aquarii	4½	+ 5	−90	1 9.9	−11 47 59	−0.6720	.5351	+.2433	−9.4003	.9858
6	42 Aquarii	6	+14	−76	6 4.7	− 7 2 44	−0.5140	.5331	+.2497	−9.3694	.9878
6	45 Aquarii	6	+52	−32	7 7.2	− 6 2 19	+0.2379	.5306	+.2514	−9.3841	.9869
6	50 Aquarii	6	+76	+19	9 42.4	− 3 32 29	+1.1340	.5279	+.2544	−9.3912	.9864
6	σ Aquarii	4½	−15	−90	12 42.1	− 0 38 16	−1.0419	0.5309	+.2573	−9.2960	9.9913

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Aug. 6	58 Aquarii	6	+ 6	−90	13 11.5	− 0 9 46	−0.6792	0.5298	+.2587	−9.3046	9.9910
6	64 Aquarii	6½	+10	−85	16 50.8	+ 3 22 27	−0.6230	.5290	+.2623	−9.2714	.9923
6	70 Aquarii	6	+79	+16	21 17.1	+ 7 40 19	+1.1085	.5249	+.2668	−9.2923	.9915
6	λ Aquarii	4	−53	−90	23 18.0	+ 9 37 18	−1.4152	.5281	+.2686	−9.1612	.9954
7	81 Aquarii	6	− 7	−90	3 33.7	−10 15 3	−0.9437	.5259	+.2719	−9.1340	.9959
7	82 Aquarii	6	−10	−90	4 7.3	− 9 42 32	−1.1379	.5262	+.2728	−9.1061	.9964
7	h^1 Aquarii	6	+63	−26	5 23.5	− 8 28 45	+0.3624	.5241	+.2736	−9.1676	.9952
7	h^2 Aquarii	7	+68	−22	5 27.6	− 8 26 27	+0.4460	.5242	+.2735	−9.1706	.9952
7	h^3 Aquarii	7	+81	− 8	5 43.9	− 8 8 57	+0.7086	.5236	+.2734	−9.1798	.9950
7	h^4 Aquarii	7½	+78	−14	6 22.8	− 7 31 21	+0.6057	.5235	+.2739	−9.1676	.9953
7	φ Aquarii	5	+38	−50	9 51.4	− 4 9 17	−0.0976	.5236	+.2765	−9.0742	.9969
7	96 Aquarii	5½	+26	−64	12 19.6	− 1 45 46	−0.3517	.5237	+.2781	−9.0120	.9977
7	B.A.C. 8134	6½	+16	−77	13 18.2	− 0 49 0	−0.5393	.5235	+.2785	−8.9776	.9980
8	20 Piscium	6	+87	+20	2 18.6	+11 46 55	+1.1736	.5216	+.2839	−8.7919	.9992
8	B.A.C. 8276	6½	− 6	−90	2 45.3	−11 47 10	−0.9621	.5223	+.2841	−8.3686	9.9999
8	B.A.C. 8311	6½	+ 5	−90	5 40.6	− 8 57 22	−0.7699	.5221	+.2845	−8.0751	0.0000
8	B.A.C. 8365	6½	+89	+26	10 41.7	− 4 5 42	+1.2489	.5222	+.2850	−8.3530	9.9999
8	B.A.C. 57	6½	+90	− 4	1[illegible] 54.0	+ 1 54 53	+0.7818	.5233	+.2849	+8.1954	.9999
9	60 Piscium	6	+28	−61	7 12.9	− 8 13 27	−0.3203	.5255	+.2810	+9.0167	.9976
9	62 Piscium	6	+ 5	−78	7 38.1	− 7 49 3	−0.7711	.5258	+.2808	+9.0555	.9972
9	B.A.C. 221	6	+90	+27	7 38.2	− 7 48 54	+1.2386	.5275	+.2808	+8.8993	.9986
9	δ Piscium	5	− 9	−83	7 49.3	− 7 38 10	−1.0095	.5255	+.2808	+9.0741	.9969
9	ε Piscium	4	+80	−14	14 38.6	− 1 2 4	+0.5761	.5291	+.2770	+9.0935	.9966
10	π Piscium	5	+79	−13	6 36.6	− 9 35 26	+0.5501	.5367	+.2641	+9.2964	.9913
10	104 Piscium	6½	−45	−77	7 34.2	− 8 39 45	−1.3763	.5335	+.2629	+9.3702	.9877
11	27 Arietis	6	+90	+ 5	6 39.9	−10 21 36	+0.8049	.5535	+.2314	+9.4678	.9804
11	B.A.C. 782	6½	+38	−43	7 49.0	− 9 14 56	−0.1223	.5515	+.2294	+9.4958	.9776
11	μ Arietis	5½	+21	−59	11 34.9	− 5 37 4	−0.4370	.5533	+.2224	+9.5214	.9746
11	47 Arietis	6	+63	−19	18 14.9	+ 0 48 22	+0.3080	.5607	+.2103	+9.5360	.9727
11	ε Arietis	4½	+30	−48	18 43.7	+ 1 16 8	−0.2758	.5586	+.2086	+9.5498	.9708
12	ζ Arietis	4½	+90	+50	1 17.3	+ 7 35 10	+1.3068	.5698	+.1954	+9.5447	.9715
12	66 Arietis	6½	+80	− 4	6 49.0	−11 5 34	+0.5326	.5714	+.1824	+9.5794	.9662
12	7 Tauri	6	+ 5	−66	9 13.3	− 8 46 47	−0.7283	.5678	+.1772	+9.6090	.9608
12	9 Tauri	6	+90	+ 7	10 16.3	− 7 46 14	+0.7178	.5745	+.1743	+9.5872	.9649
12	*g* Pleiadum	5½	+53	−22	13 24.3	− 4 45 30	+0.1366	.5748	+.1659	+9.6066	.9613
12	*b* Pleiadum	4½	+64	−13	13 26.3	− 4 43 36	+0.3198	.5755	+.1659	+9.6036	.9618
12	*m* Pleiadum	7	+23	−50	13 32.2	− 4 37 51	−0.3990	.5723	+.1659	+9.6159	.9594
12	ε Tauri	5	+44	−30	13 33.8	− 4 36 23	−0.0182	.5740	+.1658	+9.6096	.9607
12	1 Pleiadum	8	+72	− 7	13 39.8	− 4 30 33	+0.4352	.5759	+.1658	+9.6022	.9621
12	2 Pleiadum	8½	+45	−29	13 42.2	− 4 27 55	+0.0087	.5742	+.1658	+9.6096	.9607
12	3 Pleiadum	8½	+69	− 9	13 43.5	− 4 26 59	+0.3961	.5628	+.1656	+9.6030	.9620
12	4 Pleiadum	8	+53	−22	13 44.1	− 4 26 28	+0.1422	.5747	+.1654	+9.6074	.9611
12	5 Pleiadum	9	+36	−37	13 44.6	− 4 25 56	−0.1524	.5734	+.1652	+9.6123	.9601
12	6 Pleiadum	9	+56	−19	13 45.6	− 4 25 0	+0.1936	.5750	+.1650	+9.6067	.9612
12	*c* Pleiadum	5	+52	−23	13 48.8	− 4 21 57	+0.1221	.5747	+.1649	+9.6080	.9610
12	7 Pleiadum	8	+74	− 6	13 50.0	− 4 20 45	+0.4578	.5761	+.1648	+9.6023	.9621
12	*k* Pleiadum	7½	+41	−32	13 50.5	− 4 20 18	−0.0627	.5739	+.1647	+9.6111	.9604
12	*l* Pleiadum	7½	+43	−30	13 53.9	− 4 17 1	−0.0264	.5740	+.1646	+9.6107	.9604
12	9 Pleiadum	8½	+64	−12	13 59.6	− 4 11 31	+0.3305	.5757	+.1645	+9.6049	.9616
12	*d* Pleiadum	5	+84	0	14 1.4	− 4 9 49	+0.5797	.5768	+.1644	+9.6008	.9624
12	10 Pleiadum	8	+61	−15	14 4.0	− 4 7 16	+0.2762	.5755	+.1643	+9.6061	.9613
12	11 Pleiadum	8½	+73	− 7	14 9.1	− 4 2 26	+0.4429	.5763	+.1642	+9.6035	.9618
12	12 Pleiadum	7½	+47	−27	14 16.6	− 3 55 13	+0.0405	.5746	+.1641	+9.6106	.9604
12	13 Pleiadum	8½	+84	0	14 19.2	− 3 52 42	+0.5783	.5772	+.1640	+9.6016	.9622
12	14 Pleiadum	9	+90	+14	14 21.6	− 3 50 25	+0.8164	0.5783	+.1640	+9.5976	9.9630

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			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Aug. 12	15 Pleiadum	8½	+74	— 6	14 23.9	— 3 48 10	+0.4565	0.5767	+.1640	+9.6039	9.9618
12	16 Pleiadum	9½	+90	+11	14 24.4	— 3 47 32	+0.7725	.5780	+.1640	+9.5985	.9628
12	17 Pleiadum	8	+90	+17	14 24.9	— 3 47 11	+0.8664	.5784	+.1639	+9.5969	.9631
12	18 Pleiadum	8	+73	— 6	14 25.0	— 3 47 6	+0.4485	.5766	+.1639	+9.6041	.9617
12	*p* Pleiadum	7½	+75	— 5	14 25.7	— 3 46 25	+0.4734	.5767	+.1638	+9.6037	.9618
12	19 Pleiadum	8	+90	+22	14 26.1	— 3 46 4	+0.9595	.5788	+.1638	+9.5953	.9634
12	20 Pleiadum	8	+44	—29	14 26.3	— 3 45 52	—0.0030	.5745	+.1638	+9.6118	.9602
12	21 Pleiadum	8½	+41	—32	14 27.3	— 3 44 55	—0.0697	.5743	+.1638	+9.6130	.9600
12	22 Pleiadum	8	+90	+ 6	14 27.3	— 3 44 53	+0.6788	.5776	+.1638	+9.6003	.9625
12	23 Pleiadum	8½	+90	+20	14 28.6	— 3 43 40	+0.9241	.5787	+.1637	+9.5961	.9633
12	24 Pleiadum	8	+63	—13	14 28.9	— 3 43 24	+0.3075	.5760	+.1637	+9.6067	.9612
12	*η* Tauri	3	+77	— 4	14 29.9	— 3 42 20	+0.4931	.5768	+.1637	+9.6035	.9618
12	25 Pleiadum	8½	+90	+26	14 32.6	— 3 39 49	+1.0040	.5791	+.1634	+9.5948	.9635
12	26 Pleiadum	9	+90	+31	14 35.0	— 3 37 29	+1.0780	.5793	+.1633	+9.5937	.9637
12	27 Pleiadum	8½	+64	—12	14 46.5	— 3 26 30	+0.3230	.5761	+.1627	+9.6072	.9611
12	28 Pleiadum	7	+90	+46	14 50.6	— 3 22 33	+1.2414	.5805	+.1625	+9.5916	.9641
12	29 Pleiadum	8	+64	—13	14 53.0	— 3 20 10	+0.3125	.5765	+.1625	+9.6077	.9611
12	*s* Pleiadum	7½	+90	+15	15 4.3	— 3 9 21	+0.8349	.5788	+.1623	+9.5993	.9627
12	*f* Pleiadum	4½	+90	+ 5	15 9.3	— 3 4 33	+0.6500	.5781	+.1621	+9.6027	.9620
12	*h* Pleiadum	5½	+83	0	15 9.8	— 3 4 6	+0.5669	.5777	+.1619	+9.6042	.9617
12	30 Pleiadum	8½	+90	+14	15 10.5	— 3 3 25	+0.8213	.5789	+.1618	+9.5998	.9626
12	31 Pleiadum	8	+63	—13	15 11.6	— 3 2 18	+0.3090	.5767	+.1617	+9.6086	.9608
12	32 Pleiadum	8	+65	—12	15 13.6	— 3 0 22	+0.3293	.5769	+.1616	+9.6084	.9609
12	33 Pleiadum	8½	+75	— 5	15 15.5	— 2 58 34	+0.4692	.5775	+.1615	+9.6061	.9613
12	34 Pleiadum	7½	+90	+28	15 23.2	— 2 51 10	+1.0309	.5799	+.1614	+9.5968	.9631
12	35 Pleiadum	9	+77	— 4	15 23.6	— 2 50 50	+0.4937	.5775	+.1613	+9.6061	.9613
12	36 Pleadium	9	+80	— 2	15 27.1	— 2 47 26	+0.5301	.5779	+.1612	+9.6056	.9615
12	37 Pleiadum	8	+70	— 9	15 27.6	— 2 46 57	+0.3977	.5773	+.1611	+9.6079	.9610
12	38 Pleiadum	8	+90	+19	15 28.9	— 2 45 45	+0.9070	.5795	+.1610	+9.5992	.9627
12	B.A.C. 1192	6½	— 2	—65	15 34.9	— 2 39 57	—0.8297	.5717	+.1609	+9.6283	.9567
12	39 Pleiadum	8	+62	—14	15 39.9	— 2 35 5	+0.2817	.5768	+.1606	+9.6103	.9605
12	40 Pleiadum	7½	+90	+16	15 50.4	— 2 25 2	+0.8537	.5796	+.1603	+9.6012	.9623
12	*p* Tauri	6	+12	—58	21 40.6	+ 3 6 39	—0.5896	.5783	+.1390	+9.6435	.9533
13	*φ* Tauri	5	—15	—63	3 28.2	+ 8 45 26	—1.0077	.5782	+.1286	+9.6572	.9498
13	*χ* Tauri	5½	+90	+19	4 16.4	+ 9 31 31	+0.8479	.5882	+.1261	+9.6306	.9563
14	B.A.C. 1648	6½	+67	— 2	2 29.2	+ 6 49 51	+0.3447	.5958	+.0575	+9.6689	.9467
14	*β* Tauri	2	+31	—31	4 27.7	+ 8 43 22	—0.2330	.5932	+.0511	+9.6784	.9440
14	B.A.C. 1709	6½	0	—61	5 43.0	+ 9 54 33	—0.7665	.5905	+.0466	+9.6865	.9415
14	B.A.C. 1746	6½	+90	+28	8 6.3	—11 47 8	+0.8620	.5998	+.0384	+9.6654	.9477
14	B.A.C. 1772	6	+ 5	—58	9 9.7	—10 46 44	—0.6814	.5917	+.0347	+9.6874	.9413
14	136 Tauri	5	+90	+41	14 37.5	— 5 32 15	+1.0395	.6022	+.0172	+9.6655	.9476
14	B.A.C. 1882	6½	+27	—32	15 48.0	— 4 24 40	—0.3078	.5947	+.0133	+9.6844	.9422
14	*κ* Aurigæ	4	—12	—61	22 50.6	+ 2 20 20	—0.9389	.5902	—.0099	+9.6930	.9395
15	B.A.C. 2097	6½	+58	— 5	4 30.7	+ 7 46 19	+0.2181	.5957	—.0289	+9.6759	.9447
15	49 Aurigæ	6½	+66	0	6 20.5	+ 9 31 32	+0.3362	.5958	—.0349	+9.6735	.9454
15	53 Aurigæ	6½	+ 5	—60	7 31.2	+10 39 16	—0.6991	.5898	—.0383	+9.6870	.9414
15	54 Aurigæ	6	+47	+17	7 58.8	+11 5 47	+0.0145	.5877	—.0403	+9.6908	.9402
15	28 Geminor.	6	— 3	—61	9 56.1	—11 1 48	—0.8114	.5882	—.0468	+9.6871	.9413
15	47 Geminor.	6	+90	+11	20 10.3	— 1 12 46	+0.6137	.5919	—.0785	+9.6584	.9496
15	53 Geminor.	6	+10	—56	21 54.5	+ 0 27 14	—0.6124	.5838	—.0842	+9.6736	.9453
16	59 Geminor.	6	+ 7	—60	1 15.3	+ 4 39 57	—0.6687	.5820	—.0939	+9.6703	.9463
16	*ι* Geminor.	4½	— 7	—62	1 43.0	+ 4 6 32	—0.8845	.5810	—.0959	+9.6728	.9456
16	*b*² Geminor.	5½	—36	—62	3 18.3	+ 5 38 0	—1.2007	.5784	—.1003	+9.6746	.9451
16	B.A.C. 2472	6	—37	—62	3 38.2	+ 5 57 6	—1.2084	.5779	—.1014	+9.6746	.9451
16	*υ* Geminor.	5	+22	—45	5 43.7	+ 7 57 41	—0.4027	0.5807	—.1078	+9.6602	9.9490

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Aug. 16	*c* Geminor.	6	+66	− 7	8 59.7	+11 5 51	+0.3481	0.5824	−.1167	+9.6438	9.9532
16	φ Geminor.	5	−28	−63	12 42.6	− 9 19 58	−1.1448	.5727	−.1274	+9.6590	.9494
16	ω^1 Cancri	6	+36	−34	15 44.1	− 6 25 28	−0.1533	.5753	−.1358	+9.6385	.9545
16	ω^2 Cancri	6½	+51	−21	16 4.1	− 6 6 16	+0.1124	.5757	−.1364	+9.6337	.9555
16	ψ^1 Cancri	6½	−30	−64	19 30.0	− 2 48 16	−1.1782	.5674	−.1454	+9.6460	.9527
16	ψ^2 Cancri	4	− 4	−64	19 36.4	− 2 42 5	−0.8600	.5688	−.1460	+9.6409	.9539
16	λ Cancri	6	+46	−27	23 47.0	+ 1 18 58	+0.0240	.5691	−.1562	+9.6172	.9591
17	υ^1 Cancri	7	− 9	−65	2 19.1	+ 3 45 45	−0.9270	.5629	−.1620	+9.6259	.9573
17	υ^2 Cancri	6½	+ 7	−65	3 8.4	+ 4 32 52	−0.6763	.5637	−.1641	+9.6197	.9586
17	B.A.C. 2840	7	− 9	−65	3 34.7	+ 4 58 10	−0.9665	.5617	−.1653	+9.6230	.9579
17	υ^3 Cancri	6	− 1	−66	4 21.5	+ 5 43 15	−0.8091	.5619	−.1670	+9.6187	.9588
17	γ Cancri	4½	+90	+22	9 23.1	+10 33 45	+0.9870	.5643	−.1788	+9.5732	.9672
20	χ Leonis	5	+44	−44	4 38.9	+ 3 37 57	−0.0143	.5075	−.2654	+9.1493	.9956
20	σ Leonis	4	− 2	−83	13 5.2	+11 49 31	−0.8880	.5025	−.2682	+9.0741	.9969
20	89 Leonis	6	+66	−25	20 8.5	− 5 19 18	+0.3743	.5003	−.2702	+8.8273	.9990
20	MERCURY		+90	+ 6	20 56.8	− 4 32 24	+0.9531	.4448	−.2407	+8.7346	.9994
21	β Virginis	3½	+14	−82	4 51.1	+ 3 8 26	−0.6056	.4954	−.2709	+8.6514	.9996
21	B.A.C. 4043	6½	+18	−75	9 27.3	+ 7 36 58	−0.5156	.4954	−.2708	+8.3640	.9999
22	B.A.C. 4200	6½	+73	− 3	1 12.3	− 1 4 14	+0.8058	.4921	−.2675	−8.8242	.9990
22	B.A.C. 4225	6½	+84	− 7	3 16.8	+ 0 56 50	+0.7292	.4917	−.2672	−8.8714	.9988
22	*f* Virginis	6	+65	− 2	6 6.5	+ 3 41 50	+0.8251	.4914	−.2655	−8.9457	.9983
22	B.A.C. 4265	6½	−12	−90	7 10.7	+ 4 44 17	−1.0448	.4928	−.2654	−8.6964	.9992
22	B.A.C. 4294	6½	+32	−57	12 1.5	+ 9 27 3	−0.2287	.4917	−.2628	−8.9830	.9980
22	B.A.C. 4394	5½	+29	−60	23 32.4	− 3 20 52	−0.2718	.4923	−.2563	−9.1553	.9955
23	50 Virginis	6	+81	+11	0 11.6	− 2 42 56	+1.0350	.4911	−.2558	−9.2207	.9939
23	58 Virginis	6	+54	−34	4 24 6	+ 1 23 6	+0.2114	.4923	−.2527	−9.2308	.9936
23	α Virginis	1	+34	−54	8 37.3	+ 5 28 47	−0.1644	.4933	−.2497	−9.2640	.9925
23	*i* Virginis	5	+78	+36	9 26.7	+ 6 16 50	+1.3262	.4916	−.2489	−9.3167	.9905
23	B.A C. 453	6	+78	− 1	13 45.4	+ 6 28 15	+0.8312	.4931	−.2456	−9.3348	.9896
24	B.A.C. 4679	6½	−13	−90	5 42.9	+ 1 58 46	−0.9757	.5011	−.2290	−9.3923	.9864
24	B.A.C. 4700	5½	+26	−59	9 4.4	+ 5 14 33	−0.2579	.5009	−.2255	−9.4304	.9836
25	B.A.C. 4923	6	+55	−23	9 1.6	+ 4 29 23	+0.4070	.5097	−.1923	−9.5497	.9708
25	B.A.C. 5023	6	+25	−52	18 31.3	−10 18 8	−0.1337	.5166	−.1770	−9.5712	.9676
26	42 Libræ	5½	+ 8	−72	6 9.9	+ 0 58 39	−0.4344	.5244	−.1558	−9.5982	.9629
26	B.A.C. 5197	6	+38	−35	8 48.5	+ 3 32 12	+0.1714	.5234	−.1512	−9.6138	.9598
26	*b* Scorpii	5	+65	+12	11 14.8	+ 5 52 49	+0.9694	.5218	−.1462	−9.6311	.9561
26	A Scorpii	5	+45	−27	12 30.8	+ 7 7 23	+0.3256	.5254	−.1438	−9.6243	.9576
26	B.A.C. 5253	6	− 1	−84	12 40.2	+ 7 16 28	−0.5739	.5291	−.1434	−9.6111	.9604
26	B.A.C. 5254	6	−41	−90	12 42.1	+ 7 18 18	−1.1935	.5313	−.1434	−9.6016	.9622
26	B.A.C. 5255	6	+49	−23	12 42.8	+ 7 19 1	+0.3913	.5253	−.1434	−9.6257	.9573
26	3 Scorpii	6	+37	−35	13 0.8	+ 7 36 24	+0.1674	.5265	−.1425	−9.6231	.9579
26	4 Scorpii	6	+64	+38	13 23.2	+ 7 58 5	+1.2460	.5222	−.1419	−9.6394	.9542
26	B.A.C. 5286	6½	0	−80	14 53.1	+ 9 25 3	−0.5320	.5301	−.1327	−9.6165	.9593
26	π Scorpii	3½	+65	+ 5	14 58.6	+ 9 30 21	+0.8652	.5247	−.1324	−9.6374	.9548
26	B.A.C. 5314	6	+43	−27	17 3.5	−11 28 52	+0.3141	.5281	−.1314	−9.6335	.9556
26	B.A.C. 5347	5	+56	−14	19 19.7	−10 17 2	+0.5469	.5281	−.1302	−9.6410	.9538
27	σ Scorpii	3½	−27	−90	1 26.4	− 4 22 22	−0.9735	.5381	−.1169	−9.6300	.9564
27	α Scorpii	1½	+ 2	−73	5 12.2	− 0 44 5	−0.4414	.5380	−.1082	−9.6437	.9532
27	τ Scorpii	3½	+62	+42	8 6.9	+ 2 4 44	+1.2431	.5323	−.1017	−9.6705	.9463
27	B.A.C. 5603	6½	+62	+35	12 15.2	+ 6 4 34	+1.1982	.5343	−.0922	−9.6751	.9449
28	43 Ophiuchi	6	+ 5	−62	5 22.1	− 1 24 1	−0.2703	.5496	−.0500	−9.6716	.9459
28	3 Sagittarii	5	−33	−90	15 57.1	+ 8 48 32	−0.9194	.5564	−.0225	−9.6684	.9468
28	B.A.C. 6063	6½	−21	−90	19 54.4	−11 22 36	−0.6939	.5565	−.0118	−9.6722	.9457
28	B.A.C. 6072	6½	+18	−42	20 43.2	−10 35 32	+0.0561	.5538	−.0094	−9.6820	.9429
28	γ^1 Sagittarii	4	+61	+14	23 27.1	− 7 57 34	+0.9636	0.5497	−.0018	−9.6935	9.9393

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			Northern.	Southern.		H	Y	p′	q′	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Aug. 29	B.A.C. 6120	6½	− 4	−68	0 14.7	− 7 11 42	−0.3592	0.5567	+.0000	−9.6769	9.9444
29	B.A.C. 6127	5	+ 1	−60	0 48.1	− 6 39 27	−0.2517	.5561	+.0015	−9.6783	.9440
29	B.A.C 6190	6½	+16	−43	4 48.0	− 2 48 13	+0.0215	.5557	+.0121	−9.6814	.9431
29	B.A.C. 6191	6½	− 4	−69	4 48.2	− 2 47 58	−0.3774	.5576	+.0121	−9.6763	.9446
29	B.A.C. 6220	6½	+ 7	−55	6 47.1	− 0 53 24	−0.1679	.5571	+.0175	−9.6786	.9439
30	τ Sagittarii	3½	+21	−44	2 2.4	− 6 19 57	+0.0063	.5572	+.0700	−9.6698	.9464
30	B.A.C. 6628	6	+62	+ 7	9 33.1	+ 0 54 9	+0.8882	.5530	+.0900	−9.6736	.9454
30	B.A.C. 6666	6	+32	−35	11 52.5	+ 3 8 43	+0.1787	.5561	+.0991	−9.6611	.9488
30	ω Sagittarii	5½	+64	− 1	23 4.5	−10 3 33	+0.7765	.5516	+.1256	−9.6522	.9512
31	A Sagittarii	5	+64	+ 4	0 26.4	− 8 44 35	+0.8471	.5512	+.1290	−9.6507	.9515
31	B.A.C. 7049	6	−36	−90	13 52.5	+ 4 12 49	−1.1506	.5597	+.1626	−9.5894	.9645
31	17 Capricor.	6	− 8	−90	21 14.7	+11 19 32	−0.7633	.5519	+.1779	−9.5741	.9671
31	B.A.C. 7197	6	+67	− 7	22 11.5	−11 45 39	+0.6962	.5459	+.1801	−9.5964	.9632
Sept. 1	η Capricor.	5½	−16	−90	5 25.2	− 4 46 58	−0.9256	.5491	+.1962	−9.5426	.9718
1	χ Capricor.	6	+68	+ 2	7 15.5	− 3 0 34	+0.8486	.5425	+.1990	−9.5691	.9679
1	27 Capricor.	6	+47	−30	7 42.5	− 2 34 26	+0.2707	.5444	+.2004	−9.5568	.9698
1	φ Capricor.	6	+69	+ 8	10 27.4	+ 0 4 49	+0.9476	.5409	+.2061	−9.5590	.9695
1	γ Capricor.	3½	− 1	−90	21 39.0	+10 53 34	−0.7329	.5424	+.2266	−9.4734	.9799
2	δ Capricor.	3	+ 9	−81	0 50.9	−10 1 0	−0.5638	.5530	+.2369	−9.4602	.9811
2	ι Aquarii	4½	+ 5	−90	10 53.0	− 0 17 1	−0.6775	.5378	+.2461	−9.4003	.9858
2	42 Aquarii	6	+14	−76	14 44.3	+ 3 24 44	−0.5135	.5358	+ 2528	−9.3694	.9878
2	45 Aquarii	6	+52	−33	15 46.0	+ 4 18 22	+0.2346	.5337	+.2541	−9.3841	.9869
2	50 Aquarii	6	+76	+18	18 19.1	+ 6 52 28	+1.1278	.5313	+.2573	−9.3911	.9864
2	B.A C. 7835	6½	+77	+23	20 56.6	+ 9 24 44	+1.1929	.5304	+.2610	−9.3726	.9876
2	σ Aquarii	4½	−14	−90	21 16.4	+ 9 43 55	−1.0281	.5349	+.2612	−9.2960	.9913
2	58 Aquarii	6	+ 7	−89	21 45.4	+10 11 58	−0.6676	.5340	+.2614	−9.3045	.9910
3	64 Aquarii	6½	+11	−83	1 21.4	−10 19 7	−0.6052	.5331	+.2659	−9.2713	.9923
3	70 Aquarii	6	+79	+17	5 43.5	− 6 5 31	+1.1170	.5289	+.2701	−9.2923	.9915
3	λ Aquarii	4	−45	−90	7 42.2	− 4 10 40	−1.3823	.5329	+.2726	−9.1612	.9954
3	81 Aquarii	6	+ 4	−90	11 53.4	− 0 7 33	−0.7551	.5307	+.2762	−9.1339	.9959
3	82 Aquarii	6	−17	−90	12 26.4	+ 0 24 20	−1.0998	.5311	+.2764	−9.1061	.9964
3	h^1 Aquarii	6	+64	−25	13 40.4	+ 1 35 57	+0.3877	.5292	+.2772	−9.1676	.9952
3	h^2 Aquarii	7	+70	−21	13 45.1	+ 1 40 31	+0.4710	.5292	+.2772	−9.1706	.9952
3	h^3 Aquarii	7	+81	− 8	14 1.2	+ 1 57 5	+0.7226	.5286	+.2777	−9.1798	.9950
3	h^4 Aquarii	7½	+81	−11	14 39.2	+ 2 32 56	+0.6588	.5285	+.2781	−9.1674	.9953
3	φ Aquarii	5	+40	−48	18 3.8	+ 5 50 56	−0.0619	.5291	+.2809	−9.0742	.9969
3	96 Aquarii	5½	+28	−62	20 29.0	+ 8 11 28	−0.3101	.5291	+.2823	−9.0120	.9977
3	B.A.C. 8154	6½	+19	−74	21 26.4	+ 9 7 0	−0.4972	.5292	+.2828	−8.9775	.9980
4	20 Piscium	6	+87	+24	10 9.7	− 2 34 13	+1.2151	.5278	+.2886	−8.7918	.9992
4	B.A.C. 8276	6½	− 2	−90	10 35.8	− 2 8 57	−0.8962	.5285	+.2885	−8.3684	9.9999
4	B.A.C. 8311	6½	+ 7	−90	13 26.6	+ 0 36 18	−0.7388	.5289	+.2891	−8.0746	0.0000
4	B.A.C. 8365	6½	+89	+32	18 21.0	+ 5 21 15	+1.2990	.5290	+.2901	−8.3528	9.9999
5	B.A.C 57	6½	+90	− 1	0 24.1	+11 12 38	+0.8428	.5301	+.2901	+8.1959	.9999
5	60 Piscium	6	+33	−56	14 21.2	+ 0 42 32	−0.2326	.5333	+.2861	+9.0168	.9976
5	62 Piscium	6	+10	−84	14 45.8	+ 1 6 17	−0.6777	.5328	+.2858	+9.0556	.9972
5	B A.C. 221	6	+90	+33	14 46.0	+ 1 6 27	+1.3074	.5345	+.2858	+8.8994	.9986
5	δ Piscium	5	− 3	−83	14 57.9	+ 1 18 1	−0.9125	.5324	+.2858	+9.0741	.9969
5	ε Piscium	4	+88	−10	21 35.6	+ 7 42 32	+0.6586	.5366	+ 2816	+9.0935	.9966
6	π Piscium	5	+87	− 8	13 9.6	− 1 14 51	+0.6445	.5442	+.2682	+9.2964	.9913
6	104 Piscium	6½	−29	−77	14 5.8	− 0 20 33	−1.2610	.5408	+.2672	+9.3703	.9877
7	26 Arietis	6½	−36	−71	12 31.8	− 2 41 55	−1.2836	.5529	+.2343	+9.5175	.9751
7	27 Arietis	6	+90	+11	12 40 9	− 2 33 8	+0.9077	.5599	+.2343	+9.4678	.9804
7	B.A C. 782	6½	+44	−37	13 48.7	− 1 27 51	−0.0109	.5576	+.2316	+9.4959	.9776
7	υ Arietis	5½	+28	−52	18 30.4	+ 8 5 57	−0.3225	.5538	+.2251	+9.5214	.9746
8	47 Arietis	6	+70	−13	0 3.4	+ 8 24 14	+0.4145	0.5659	+.2117	+9.5364	9.9727

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			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Sept. 8	ε Arietis	4½	+36	—42	0 31.6	+ 8 51 27	—0.1624	0.5647	+.2104	+9.5498	9.9708
8	66 Arietis	6½	+90	+ 2	12 26.4	— 3 40 49	+0.6410	.5756	+.1834	+9.5798	.9661
8	7 Tauri	6	+11	—63	14 49.0	— 1 23 47	—0.6132	.5718	+.1779	+9.6091	.9608
8	9 Tauri	6	+90	+13	15 51.2	— 0 23 56	+0.8255	.5785	+.1751	+9.5872	.9649
8	11 Tauri	6	—21	—65	17 19.5	+ 1 0 55	—1.0622	.5711	+.1715	+9.6238	.9577
8	*g* Pleiadum	5½	+59	—17	18 57.1	+ 2 34 43	+0.2470	.5780	+.1674	+9.6066	.9613
8	*b* Pleiadum	4½	+72	— 7	18 59.0	+ 2 36 32	+0.4293	.5787	+.1671	+9.6036	.9618
8	*m* Pleiadum	7	+30	—43	19 4.9	+ 2 42 10	—0.2865	.5757	+.1669	+9.6160	.9594
8	*s* Tauri	5	+50	—25	19 6.4	+ 2 43 38	+0.0929	.5776	+.1667	+9.6097	.9607
8	1 Pleiadum	8	+81	— 2	19 12.5	+ 2 49 27	+0.5438	.5793	+.1665	+9.6031	.9620
8	2 Pleiadum	8½	+52	—23	19 15.2	+ 2 52 1	+0.1196	.5776	+.1665	+9.6096	.9607
8	3 Pleiadum	8½	+78	— 4	19 16.1	+ 2 52 56	+0.5039	.5793	+.1663	+9.6031	.9620
8	4 Pleiadum	8	+60	—16	19 16.7	+ 2 53 31	+0.2523	.5782	+.1661	+9.6074	.9611
8	5 Pleiadum	9	+43	—31	19 17.2	+ 2 53 58	—0.0403	.5768	+.1659	+9.6124	.9601
8	6 Pleiadum	9	+63	—14	19 18.2	+ 2 54 55	+0.3034	.5783	+.1657	+9.6067	.9612
8	*c* Pleiadum	5	+59	—17	19 21.3	+ 2 57 53	+0.2320	·5780	+.1655	+9.6080	.9610
8	7 Pleiadum	8	+83	0	19 22.5	+ 2 59 6	+0.5663	.5795	+.1654	+9.6023	.9621
8	*k* Pleiadum	7½	+48	—27	19 23.0	+ 2 59 32	+0.0483	.5771	+.1653	+9.6112	.9603
8	*l* Pleiadum	7½	+50	—25	19 26.4	+ 3 2 47	+0.0843	.5773	+.1652	+9.6107	.9604
8	9 Pleiadum	8½	+73	— 7	19 32.0	+ 3 8 13	+0.4396	.5789	+.1651	+9.6049	.9616
8	*d* Pleiadum	5	+90	+ 6	19 33.8	+ 3 9 54	+0.6876	.5801	+.1650	+9.6008	.9624
8	10 Pleiadum	8	+69	— 9	19 37.4	+ 3 13 26	+0.3885	.5787	+.1649	+9.6061	.9613
8	11 Pleiadum	8½	+82	— 1	19 41.4	+ 3 17 12	+0.5516	.5793	+.1648	+9.6035	.9618
8	12 Pleiadum	7½	+54	—26	19 48.8	+ 3 24 20	+0.1514	.5775	+.1647	+9.6106	.9604
8	13 Pleiadum	8½	+90	+ 6	19 51.4	+ 3 26 49	+0.6866	.5801	+.1646	+9.6017	.9622
8	14 Pleiadum	9	+90	+20	19 53.7	+ 3 29 4	+0.9240	.5812	+.1645	+9.5976	.9630
8	15 Pleiadum	8½	+83	0	19 56.1	+ 3 31 22	+0.5654	.5796	+.1645	+9.6040	.9618
8	16 Pleiadum	9½	+90	+17	19 56.6	+ 3 31 48	+0.8797	.5809	+.1645	+9.5986	.9628
8	17 Pleiadum	8	+90	+23	19 57.1	+ 3 32 19	+0.9731	.5813	+.1645	+9 5969	.9631
8	18 Pleiadum	8	+83	— 1	19 57.2	+ 3 32 24	+0.5572	.5795	+.1645	+9.6042	.9617
8	*p* Pleiadum	7½	+85	+ 1	19 57.9	+ 3 33 5	+0.5820	.5796	+.1644	+9.6037	.9618
8	19 Pleiadum	8	+90	+30	19 58.3	+ 3 33 26	+1.0659	.5817	+.1643	+9.5953	.9634
8	20 Pleiadum	8	+51	—23	19 58.5	+ 3 33 38	+0.1079	.5775	+.1642	+9.6119	.9602
8	21 Pleiadum	8½	+47	—27	19 59.5	+ 3 34 34	+0.0416	.5772	+.1641	+9.6130	.9600
8	22 Pleiadum	8	+90	+12	19 59.5	+ 3 34 36	+0.7864	.5805	+.1640	+9.6003	.9625
8	23 Pleiadum	8½	+90	+27	20 0.7	+ 3 35 49	+1.0304	.5817	+.1639	+9.5961	.9633
8	24 Pleiadum	8	+71	— 8	20 1.0	+ 3 36 4	+0.4168	.5789	+.1638	+9.6068	.9612
8	η Tauri	3	+87	+ 2	20 1.1	+ 3 36 8	+0.6016	.5797	+.1637	+9.6036	.9618
8	25 Pleiadum	8½	+90	+33	20 4.7	+ 3 39 36	+1.1095	.5820	+.1636	+9.5948	.9635
8	26 Pleiadum	9	+90	+40	20 7.1	+ 3 41 54	+1.1831	.5824	+.1635	+9.5937	.9637
8	27 Pleiadum	8½	+72	— 7	20 18.4	+ 3 52 47	+0.4318	.5792	+.1634	+9.6072	.9611
8	29 Pleiadum	8	+71	— 8	20 24.9	+ 3 59 3	+0.4217	.5796	+.1633	+9.6077	.9611
8	*s* Pleiadum	7½	+90	+21	20 36.1	+ 4 9 46	+0.9417	.5819	+.1631	+9.5993	.9627
8	*f* Pleiadum	4½	+90	+10	20 41.0	+ 4 14 31	+0.7577	.5811	+.1629	+9.6027	.9620
8	*h* Pleiadum	5	+90	+ 6	20 41.5	+ 4 14 58	+0.6752	.5807	+.1627	+9.6042	.9617
8	30 Pleiadum	8½	+90	+21	20 42.2	+ 4 15 38	+0.9286	.5819	+.1625	+9.5998	.9626
8	31 Pleiadum	8	+71	— 8	20 43.4	+ 4 16 45	+0.4185	.5795	+.1623	+9.6086	.9608
8	32 Pleiadum	8	+73	— 7	20 45.4	+ 4 18 41	+0.4389	.5796	+.1621	+9.6084	.9609
8	33 Pleiadum	8½	+84	+ 1	20 47.2	+ 4 20 27	+0.5780	.5803	+.1620	+9.6061	.9613
8	34 Pleiadum	7½	+90	+36	20 54.8	+ 4 27 45	+1.1377	.5828	+.1619	+9.5968	.9631
8	35 Pleiadum	9	+87	+ 2	20 55.2	+ 4 28 6	+0.6026	.5805	+.1618	+9.6060	.9614
8	36 Pleadium	9	+90	+ 4	20 57.7	+ 4 30 28	+0.6389	.5807	+.1617	+9.6056	.9615
8	37 Pleiadum	8	+78	— 3	20 59.2	+ 4 31 56	+0.5070	.5801	+.1616	+9.6079	.9610
8	38 Pleiadum	8	+90	+26	21 0.4	+ 4 33 8	+1.0140	.5825	+.1615	+9.5992	.9627
8	B.A.C. 1192	6½	+ 5	—65	21 6.4	+ 4 38 52	+0.7155	0.5747	+.1614	+9.6283	9.9567

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p'*	*q'*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Sept. 8	39 Pleiadum	8	+69	— 8	21 11.4	+ 4 43 41	+0.3912	0.5799	+.1612	+9.6103	9.9605
8	40 Pleiadum	7½	+90	+23	21 21.7	+ 4 53 36	+0.9550	.5825	+.1607	+9.6012	.9623
9	*p* Tauri	6	+12	—52	5 8.1	—11 38 29	—0.4779	.5801	+.1391	+9.6436	.9532
9	*φ* Tauri	5	— 7	—63	8 48.4	— 8 7 1	—0.8962	.5791	+.1289	+9.6572	.9498
9	*χ* Tauri	5½	+90	+26	9 42.4	— 7 15 12	+0.9539	.5891	+.1264	+9.6304	.9563
10	B.A.C. 1648	6½	+74	+ 4	7 54.2	— 9 57 50	+0.4474	.5946	+.0565	+9.6689	.9467
10	B.A.C. 1649	6½	—35	—61	7 56.6	— 9 55 35	—1.1883	.5855	+.0565	+9.6913	.9400
10	*β* Tauri	2	+37	—25	7 53.1	— 8 3 54	—0.1317	.5915	+.0497	+9.6784	.9440
10	B.A.C. 1709	6½	+ 7	—57	11 8.7	— 6 51 24	—0.6675	.5886	+.0461	+9.6865	.9415
10	B.A.C. 1746	6½	+90	+34	13 32.7	— 4 33 21	+0.9634	.5980	+.0388	+9.6654	.9477
10	B.A.C. 1772	6	+12	—51	14 46.6	— 3 22 33	—0.5833	.5894	+.0345	+9.6874	.9413
10	136 Tauri	5	+90	+49	20 6.5	+ 1 44 5	+1.1382	.5991	+.0170	+9.6655	.9476
10	B.A.C. 1882	6½	+33	—26	21 17.5	+ 2 52 13	—0.2125	.5913	+.0125	+9.6844	.9422
11	*k* Aurigæ	4	— 5	—61	4 24.0	+ 9 41 3	—0.8496	.5866	—.0098	+9.6930	.9395
11	B.A.C. 2097	6½	+72	0	10 7.9	— 8 49 10	+0.3098	.5910	—.0293	+9.6759	.9447
11	49 Aurigæ	6½	+73	+ 5	11 59.0	— 7 2 37	+0.4274	.5913	—.0356	+9.6735	.9454
11	53 Aurigæ	6½	+10	—53	13 10.5	— 5 53 59	—0.6134	.5854	—.0385	+9.6869	.9414
11	54 Aurigæ	6	+51	—12	13 38.5	— 5 27 8	+0.1055	.5890	—.0408	+9.6771	.9444
11	28 Geminor.	6	+ 3	—61	15 37.3	— 3 33 12	—0.7310	.5836	—.0468	+9.6871	.9413
12	47 Geminor.	6	+90	+15	2 0.5	+ 6 24 53	+0.6994	.5860	—.0790	+9.6584	.9496
12	53 Geminor.	6	+ 9	—51	3 46.4	+ 8 6 34	—0.5298	.5789	—.0842	+9.6736	.9458
12	59 Geminor.	6½	+11	—55	7 10.5	+11 22 36	—0.5939	.5765	—.0937	+9.6703	.9463
12	*ι* Geminor.	4	— 2	—62	7 38.7	+11 49 39	—0.8121	.5755	—.0949	+9.6727	.9456
12	b^1 Geminor.	5½	—57	—62	9 3.9	—10 48 30	—1.2901	.5717	—.0995	+9.6774	.9443
12	b^2 Geminor.	5½	—24	—62	9 10.7	—10 42 10	—1.0958	.5726	—.1001	+9.6745	.9451
12	B.A.C. 2472	6	—28	—62	9 35.8	—10 17 49	—1.1390	.5720	—.1010	+9.6746	.9451
12	*υ* Geminor.	5	+27	—41	11 43.5	— 8 15 5	—0.3293	.5696	—.1068	+9.6746	.9451
12	*c* Geminor.	6	+72	— 3	15 2.9	— 5 3 25	+0.4249	.5752	—.1161	+9.6438	.9532
12	*φ* Geminor.	5	+22	—63	18 50.1	— 1 24 58	—1.0815	.5662	—.1269	+9.6590	.9494
12	ω^1 Cancri	6	+40	—31	21 54.9	+ 1 32 47	—0.0843	.5683	—.1348	+9.6385	.9545
12	ω^2 Cancri	6½	+56	—17	22 15.3	+ 1 52 22	+0.1829	.5693	—.1357	+9.6337	.9555
13	ψ^1 Cancri	6½	—49	—64	1 45.0	+ 5 14 15	—1.2922	.5600	—.1409	+9.6484	.9520
13	ψ^2 Cancri	4	— 0	—64	1 51.6	+ 5 20 37	—0.7989	.5624	—.1445	+9.6409	.9539
13	*λ* Cancri	6	+50	—24	6 7.1	+ 9 26 34	+0.0890	.5629	—.1548	+9.6172	.9591
13	υ^1 Cancri	7	— 6	—65	8 42.1	+11 55 55	—0.8716	.5610	—.1611	+9.6093	.9607
13	υ^2 Cancri	6½	+11	—62	9 32.4	—11 15 28	—0.6076	.5568	—.1634	+9.6197	.9586
13	B.A.C. 2840	7	— 6	—64	9 59.2	—10 49 48	—0.8899	.5552	—.1643	+9.6230	.9579
13	υ^3 Cancri	6	+ 3	—64	10 46.9	—10 3 51	—0.7539	.5551	—.1658	+9.6187	.9588
13	*γ* Cancri	4½	+90	+27	15 55.3	— 5 6 38	+1.0532	.5584	—.1768	+9.5732	.9672
14	8 Leonis	6½	+90	+45	16 18.3	— 5 33 45	+1.3107	.5378	—.2207	+9.4679	.9804
15	34 Leonis	6	+85	— 8	8 59.5	+10 35 24	+0.6208	.5226	—.2427	+9.3854	.9868
15	37 Leonis	6	+25	—61	11 19.0	—11 9 42	—0.3915	.5184	—.2461	+9.3968	.9861
16	*l* Leonis	5	—28	—79	4 1.7	+ 5 2 57	—1.2489	.5072	—.2595	+9.2921	.9915
19	B.A.C. 4394	5½	+27	—62	7 26.4	+ 6 20 41	—0.3094	.4942	—.2572	—9.1553	.9955
19	50 Virginis	6	+81	+ 9	8 5.4	+ 6 58 37	+0.9987	.4925	—.2566	—9.2207	.9939
19	58 Virginis	6	+51	—36	12 18.5	+11 4 41	+0.1705	.4941	—.2540	—9.2308	.9936
19	*α* Virginis	1	+31	—56	16 30.0	— 8 50 49	—0.2070	.4956	—.2506	—9.2572	.9928
19	*i* Virginis	5	+78	+32	17 19.3	— 8 2 54	+1.2865	.4932	—.2500	—9.3167	.9905
19	B.A.C. 4531	6	+71	— 4	21 37.1	— 3 52 15	+0.7893	.4948	—.2463	—9.3348	.9896
20	B.A.C. 4679	6½	—17	—90	13 36.9	+11 40 29	—1.0428	.5034	—.2300	—9.3922	.9864
20	B.A.C. 4700	5½	+23	—62	16 52.4	— 9 9 45	—0.3055	.5028	—.2263	—9.4304	.9836
20	B.A.C. 4722	6	+73	+32	19 14.7	— 6 51 33	+1.2651	.4997	—.2239	—9.4789	.9793
21	B.A.C. 4923	6	+53	—26	16 43.7	—10 0 38	+0.3581	.5114	—.1929	—9.5497	.9708
22	B.A.C. 5023	6	+22	—55	2 14.9	— 0 46 49	—0.1811	.5178	—.1712	—9.5712	.9676
22	42 Libræ	5½	+ 5	—76	13 53.9	+10 30 17	—0.4882	0.5249	—.1562	—9.5982	9.9629

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Sept. 22	B.A.C. 5197	6	+35	—38	16 32.7	—10 55 53	+0.1232	0.5245	—.1507	—9.6138	9.9598
22	*b* Scorpii	5	+65	+ 8	18 59.3	— 8 33 58	+0.9235	.5221	—.1464	- 9.6311	.9561
22	A Scorpii	5	+43	—29	20 15.5	— 7 20 12	+0.2779	.5251	—.1439	—9.6243	.9576
22	B.A.C. 5253	6	— 3	—89	20 24.9	— 7 11 9	—0.6238	.5290	—.1436	—9.6111	.9604
22	B.A.C. 5254	6	—47	—90	20 26.8	— 7 9 17	—1.2451	.5314	—.1433	—9.6016	.9622
22	B.A.C. 5255	6	+46	—26	20 32.3	— 7 3 58	+0.3329	.5256	—.1433	—9.6257	.9573
22	3 Scorpii	6	+34	—38	20 45.5	— 6 51 9	+0.1195	.5265	—.1427	—9.6231	.9579
22	4 Scorpii	6	+64	+32	21 8.0	— 6 29 24	+1.2015	.5223	—.1420	—9.6394	.9542
22	B.A.C. 5286	6½	— 2	—85	22 38.2	— 5 2 10	—0.5817	.5301	—.1386	—9.6166	.9593
22	π Scorpii	3½	+65	+ 2	22 43.7	— 4 56 48	+0.8187	.5246	—.1383	—9.6372	.9548
23	B.A.C. 5314	6	+41	—30	0 52.0	— 2 52 38	+0.2664	.5278	—.1340	—9.6335	.9556
23	B.A.C. 5347	5	+53	—17	3 5.8	— 0 43 14	+0.5008	.5524	—.1300	—9.6410	.9538
23	σ Scorpii	3½	—31	—90	9 14.2	+ 5 13 8	—1.0243	.5371	—.1164	—9.6300	.9564
23	α Scorpii	1½	0	—78	13 0.3	+ 8 51 44	—0.4897	.5368	—.1078	—9.6437	.9532
23	τ Scorpii	3½	+62	+35	15 57.1	+11 42 40	+1.2026	.5308	—.1515	—9.6704	.9463
23	B.A.C. 5603	3½	+62	+30	20 7.1	— 8 15 44	+1.1583	.5329	—.0916	—9.6751	.9449
24	43 Ophiuchi	6	+ 2	—66	13 23.9	+ 8 25 34	—0.3329	.5466	—.0490	—9.6716	.9459
25	3 Sagittarii	5	—36	—90	0 6.9	— 5 13 54	—0.9648	.5526	—.0223	—9.6684	.9468
25	B.A.C. 6063	6½	—23	—90	4 7.4	— 1 21 50	—0.7373	.5524	—.0116	—9.6722	.9457
25	B.A.C. 6072	6½	+15	—44	4 57.1	— 0 33 54	+0.0104	.5490	—.0095	—9.6820	.9429
25	γ Sagittarii	4	+61	+11	6 43.1	+ 1 6 14	+0.9320	.5454	—.0021	—9.6935	.9393
25	B.A.C. 6120	6½	— 6	—71	8 21.4	+ 2 42 48	—0.3994	.5519	+.0007	—9.6769	.9444
25	B.A.C. 6127	5	— 1	—63	9 5.3	+ 3 25 35	—0.2914	.5516	+.0072	—9.6783	.9440
25	B.A.C 6190	6½	+14	—46	13 8.9	+ 7 20 33	—0.0152	.5510	+.0122	—9.6814	.9431
25	B.A.C. 6191	6½	— 6	—72	13 9.2	+ 7 20 49	—0.4170	.5529	+.0122	—9.6763	.9446
25	B.A.C. 6220	6½	+ 5	—57	15 10.0	+ 9 17 18	—0.2055	.5519	+.0176	—9.6786	.9439
26	τ Sagittarii	3½	+19	—46	10 45.4	+ 4 10 51	—0.0253	.5517	+.0694	—9.6698	.9464
26	B.A.C. 6628	6	+62	+ 6	18 24.4	+11 33 34	+0.8652	.5468	+.0887	—9.6736	.9454
26	B.A.C. 6666	6	+31	—36	20 46.5	—10 9 25	+0.1510	.5500	+.0971	—9 6611	.9488
27	ω Sagittarii	5½	+64	— 2	8 11.2	+ 0 51 8	+0.7562	.5456	+.1241	—9.6522	.9511
27	A Sagittarii	5	+64	+ 3	9 34.6	+ 2 11 38	+0.8274	.5449	+.1282	—9.6507	.9515
27	B.A.C. 7049	6	—38	—90	23 15.6	+ 5 23 56	—1.1731	.5498	+.1597	—9.5894	.9645
28	17 Capricor.	6	—19	—90	6 45.5	— 1 21 38	—0.7828	.5458	+.1766	—9.5741	.9671
28	B.A.C. 7197	6	+66	— 8	7 43.3	— 0 25 53	+0.6794	.5402	+.1788	—9.5964	.9632
28	η Capricor.	5½	—17	—90	15 3.9	+ 6 39 45	—0.9491	.5439	+.1938	—9.5426	.9718
28	χ Capricor.	6	+68	+ 3	16 55.8	+ 8 27 50	+0.8351	.5373	+.1980	—9.5691	.9679
28	27 Capricor.	6	+47	—31	17 23.3	+ 8 54 22	+0.2544	.5391	+.1985	—9.5568	.9698
28	φ Capricor.	6	+69	+ 7	20 10.6	+11 36 4	+0.9352	.5361	+.2043	—9.5590	.9695
29	γ Capricor.	3½	— 2	—90	7 31.0	— 1 26 25	—0.7496	.5381	+.2251	—9.4734	.9799
29	δ Capricor.	3	+ 9	—81	10 44.9	+ 1 41 6	—0.5665	.5366	+.2306	—9.4602	.9811
29	ι Aquarii	4½	+ 4	—90	19 52.1	+10 30 10	—0.6902	.5347	+.2448	—9.4003	.9858
30	42 Aquarii	6	+13	—77	0 45.5	— 8 46 1	—0.5244	.5334	+.2520	—9.3694	.9878
30	45 Aquarii	6	+52	—33	1 47.5	— 7 46 2	+0.2251	.5314	+.2533	—9.3841	.9869
30	50 Aquarii	6	+76	+18	4 21.5	— 5 17 6	+1.1195	.5291	+.2560	—9.3912	.9864
30	B.A.C. 7835	6½	+77	+22	6 59.6	— 2 44 8	+1.1733	.5291	+.2570	—9.3726	.9876
30	σ Aquarii	4½	—15	—90	7 19.5	— 2 24 55	—1.0390	.5328	+.2573	—9.2960	.9913
30	58 Aquarii	6	+ 6	—90	7 48.6	— 1 56 44	—0.6763	.5320	+.2580	—9.3045	.9910
30	64 Aquarii	6½	+11	—84	11 25.2	+ 1 32 49	—0.6132	.5314	+.2657	—9.2713	.9923
30	70 Aquarii	6	+79	+16	15 47.7	+ 5 46 46	+1.1082	.5279	+.2701	—9.2923	.9915
30	λ Aquarii	4	—46	—90	17 46.4	+ 7 41 41	—1.3870	.5317	+.2721	—9.1612	.9954
30	81 Aquarii	6	+ 4	—90	21 57.4	+11 44 33	—0.7597	.5306	+.2767	—9.1339	.9959
30	82 Aquarii	6	—17	—90	22 30.3	—11 43 37	—1.1031	.5308	+.2769	—9.1061	.9964
30	h^1 Aquarii	6	+64	—25	23 44.2	—11 32 9	+0.3808	.5291	+.2772	—9.1676	.9952
30	h^2 Aquarii	7	+69	—21	23 48.9	—10 27 36	+0.4636	.5290	+.2773	—9.1506	.9952
Oct. 1	h^3 Aquarii	7	+81	— 8	0 4.9	—10 12 6	+0.7232	0.5286	+.2778	—9.1798	9.9950

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log. cos D
			°	°	h. m.	h. m. s.					
Oct. 1	h^4 Aquarii	7½	+81	—11	0 42.9	— 9 35 21	+0.6512	0.5287	+.2782	—9.1676	9.9953
1	φ Aquarii	5	+40	—48	4 6.7	— 6 18 8	—0.0676	.5296	+.2810	—9.0742	.9969
1	96 Aquarii	5½	+28	—62	6 31.4	— 3 58 6	—0.3144	.5300	+.2827	—9.0119	.9977
1	B.A.C. 8134	6½	+18	—74	7 28.2	— 3 3 5	—0.5010	.5302	+.2834	—8.9775	.9980
1	20 Piscium	6	+87	+22	20 5.2	+ 9 9 21	+1.2037	.5306	+.2902	—8.7918	.9992
1	B.A.C. 8276	6½	— 2	—90	20 31.0	+ 9 34 20	—0.8950	.5315	+.2902	—8.3683	9.9999
1	B.A.C. 8311	6½	+ 7	—90	23 19.7	—11 42 27	—0.7381	.5316	+.2908	—8.0743	0.0000
2	B.A.C. 8365	6½	+89	+30	4 10.2	— 7 1 27	+1.2844	.5324	+.2918	—8.3526	9.9999
2	B.A.C. 57	6½	+90	— 2	10 7.8	— 1 15 36	+0.8324	.5345	+.2922	+8.1961	.9999
3	60 Piscium	6	+33	—57	23 49.0	+11 58 16	—0.2341	.5393	+.2892	+9.0168	.9976
3	62 Piscium	6	+10	—83	0 12.9	—11 38 34	—0.6749	.5391	+.2889	+9.0557	.9972
3	δ Piscium	5	— 3	—83	0 23.8	—11 28 4	—0.9070	.5387	+.2888	+9.0742	.9969
3	ε Piscium	4	+87	—10	6 53.5	— 5 11 32	+0.6478	.5437	+.2850	+9.0936	.9966
3	π Piscium	5	+86	— 9	22 3.3	— 9 26 41	+0.6317	.5524	+.2721	+9.2965	.9913
3	104 Piscium	6½	—28	—77	22 57.9	+10 19 22	—1.2492	.5493	+.2710	+9.3703	.9877
4	26 Arietis	6½	—34	—71	20 43.2	+ 7 17 12	—1.2736	.5629	+.2384	+9.5175	.9751
4	27 Arietis	6	+90	+10	20 51.9	+ 7 25 40	+0.8862	.5698	+.2384	+9.4678	.9804
4	B A.C. 782	6½	+44	—37	21 57.5	+ 8 28 47	—0.0196	.5678	+.2363	+9.4959	.9776
5	μ Arietis	5½	+27	—53	1 32.1	+11 55 18	—0.3270	.5692	+.2288	+9.5214	.9746
5	47 Arietis	6	+69	—14	7 52.5	— 5 58 54	+0.3981	.5764	+.2152	+9.5361	.9727
5	ε Arietis	4½	+36	—43	8 19.8	— 5 32 39	—0.1705	.5742	+.2147	+9.5498	.9708
5	66 Arietis	6½	+88	+ 5	19 51.7	+ 5 32 3	+0.6193	.5856	+.1889	+9.5795	.9662
5	7 Tauri	6	+11	—63	22 9.7	+ 7 44 31	—0.6169	.5815	+.1808	+9.6091	.9608
5	9 Tauri	6	+90	+12	23 9.9	+ 8 42 24	+0.8001	.5881	+.1780	+9.5872	.9649
6	11 Tauri	6	—18	—65	0 35.5	+10 4 31	—1.0593	.5808	+.1742	+9.6238	.9577
6	*g* Pleiadum	5½	+58	—18	2 10.0	+11 35 13	+0.2296	.5873	+.1687	+9.6066	.9613
6	*b* Pleiadum	4½	+70	— 9	2 11.9	+11 37 1	+0.4091	.5879	+.1685	+9.6036	.9618
6	*m* Pleiadum	7	+28	—44	2 17.6	+11 42 29	—0.2961	.5850	+.1683	+9.6160	.9594
6	ε Tauri	5	+49	—25	2 19.1	+11 43 54	+0.0775	.5869	+.1681	+9.6097	.9607
6	*c* Pleiadum	5	+57	—18	2 33.5	+11 57 42	+0.2157	.5878	+.1679	+9.6080	.9610
6	*h* Pleiadum	7½	+47	—27	2 35.1	+11 59 18	+0.0345	.5869	+.1677	+9.6112	.9603
6	*l* Pleiadum	7½	+49	—25	2 38.4	—11 57 35	+0.0700	.5871	+.1675	+9.6107	.9604
6	*d* Pleiadum	5	+90	+ 5	2 45.6	—11 50 41	+0.6644	.5901	+.1673	+9.6008	.9624
6	12 Pleiadum	7½	+53	—22	3 0.1	—11 36 43	+0.1356	.5879	+.1671	+9.6106	.9604
6	*p* Pleiadum	7½	+83	— 1	3 8.9	—11 28 17	+0.5602	.5900	+.1672	+9.6038	.9618
6	η Tauri	3	+85	0	3 12.0	—11 25 19	+0.5795	.5901	+.1670	+9.6036	.9618
6	28 Pleiadum	7	+90	+58	3 32.7	—11 5 26	+1.3132	.5939	+.1669	+9.5916	.9641
6	*s* Pleiadum	7½	+90	+20	3 45.9	—10 52 47	+0.9173	.5926	+.1662	+9.5993	.9627
6	*f* Pleiadum	4½	+90	+ 9	3 50.7	—10 48 11	+0.7334	.5919	+.1651	+9.6027	.9620
6	*h* Pleiadum	5½	+90	+ 5	3 51.2	—10 47 45	+0.6514	.5916	+.1651	+9.6042	.9617
6	34 Pleiadum	7½	+90	+33	4 4.1	—10 35 22	+1.1074	.5937	+.1645	+9.5971	.9631
6	B.A.C. 1192	6½	+ 5	—65	4 15.3	—10 24 38	—0.7190	.5850	+.1640	+9.6284	.9567
6	40 Pleiadum	7½	+90	+21	4 34.0	—10 6 39	+0.9381	.5927	+.1631	+9.6013	.9623
6	*p* Tauri	6	+18	—52	12 2.4	— 2 56 38	—0.4868	.5896	+.1410	+9.6436	.9532
6	φ Tauri	5	— 7	—63	15 36.2	+ 0 28 19	—0.9012	.5890	+.1307	+9.6572	.9498
6	χ Tauri	5½	+90	+24	16 28.6	+ 1 18 34	+0.9252	.5990	+.1277	+9.6307	.9562
7	B.A.C. 1648	6½	+72	+ 2	14 5.5	— 1 59 6	+0.4214	.6011	+.0572	+9.6689	.9467
7	B.A C. 1649	6½	—36	—61	14 7.8	— 1 56 54	—1.1938	.5920	+.0572	+9.6913	.9401
7	β Tauri	2	+36	—26	16 0.6	— 0 8 54	—0.1509	.5985	+.0500	+9.6784	.9440
7	B.A.C. 1709	6½	+ 6	—58	17 15.6	+ 1 2 54	—0.6803	.5954	+.0467	+9.6865	.9415
7	B.A.C. 1746	6½	+90	+35	19 36.5	+ 3 17 49	+0.9766	.6043	+.0386	+9.6654	.9477
7	B.A.C. 1772	6	+11	—52	20 48.8	+ 4 27 5	—0.5982	.5958	+.0345	+9.6874	.9413
8	136 Tauri	5	+90	+46	2 2.3	+ 9 27 17	+1.1051	.6043	+.0166	+9.6655	.9476
8	B.A.C. 1882	6½	+31	—27	3 11.9	+10 34 1	—0.2320	.5967	+.0129	+9.6844	.9422
8	κ Aurigæ	4	— 7	—61	10 11.0	— 6 44 31	—0.8652	0.5911	—.0104	+9.6930	9.9395

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Oct. 8	B.A.C. 2097	6½	+62	— 2	15 49.7	— 1 20 3	+0.2842	0.5954	—.0297	+9.6759	9.9447
8	49 Aurigæ	6½	+71	+ 3	17 39.2	+ 0 24 58	+0.4007	.5950	—.0353	+9.6735	.9454
8	53 Aurigæ	6½	+ 9	—55	18 49.8	+ 1 32 38	—0.6329	.5889	—.0393	+9.6870	.9414
8	54 Aurigæ	6	+49	—13	19 17.5	+ 1 59 10	+0.0786	.5927	—.0402	+9.6770	.9444
8	28 Geminor.	6	+ 1	—61	21 14.8	+ 3 51 38	—0.7472	.5869	—.0464	+9.6871	.9413
9	47 Geminor.	6	+90	+13	7 31.7	—10 16 34	+0.6704	.5878	—.0794	+9.6584	.9496
9	53 Geminor.	6	+14	—52	9 16.8	— 8 35 43	—0.5521	.5797	—.0839	+9.6736	.9453
9	59 Geminor.	6	+10	—57	12 39.5	— 5 21 6	—0.6175	.5775	—.0944	+9.6703	.9463
9	ι Geminor.	4	— 4	—62	13 7.5	— 4 54 12	—0.8345	.5757	—.0956	+9.6727	.9456
9	b^2 Geminor.	5½	—27	—62	14 43.8	— 3 21 41	—1.1254	.5730	—.1003	+9.6744	.9451
9	B.A.C. 2472	6	—30	—62	15 4.0	— 3 2 19	—1.1610	.5729	—.1012	+9.6746	.9451
9	υ Geminor.	5	+25	—42	17 11.1	— 1 0 12	—0.3545	.5755	—.1070	+9.6602	.9490
9	c Geminor.	6	+70	— 4	20 29.8	+ 2 10 45	+0.3966	.5759	—.1166	+9.6438	.9532
10	φ Geminor.	5	—24	—63	0 16.2	+ 5 48 25	—1.1059	.5659	—.1263	+9.6590	.9494
10	ω^1 Cancri	6	+38	—32	3 20.8	+ 8 46 3	—0.1113	.5682	—.1340	+9.6385	.9545
10	ω^2 Cancri	6½	+54	—18	3 41.2	+ 9 5 37	+0.1557	.5685	—.1354	+9.6336	.9555
10	ψ^1 Cancri	6½	—27	—64	7 10.9	—11 32 33	—1.1453	.5602	—.1440	+9.6459	.9527
10	ψ^2 Cancri	4	— 2	—64	7 17.5	—11 26 10	—0.8255	.5615	—.1443	+9.6409	.9539
10	λ Cancri	6	+48	—25	11 33.2	— 7 19 58	+0.0611	.5612	—.1548	+9.6172	.9591
10	υ^1 Cancri	7	— 6	—65	14 8.7	— 4 50 12	—0.8989	.5549	—.1607	+9.6259	.9573
10	υ^2 Cancri	6½	+10	—63	14 59.1	— 4 1 36	—0.6352	.5549	—.1627	+9.6197	.9586
10	B.A.C. 2840	7	— 8	—65	15 26.0	— 3 35 44	—0.9175	.5528	—.1639	+9.6230	.9579
10	υ^3 Cancri	6	+ 1	—66	16 13.9	— 2 49 35	—0.7820	.5536	—.1652	+9.6187	.9588
10	γ Cancri	4½	+90	+25	21 23.4	+ 2 8 51	+1.0250	.5561	—.1760	+9.5732	.9672
11	8 Leonis	6½	+90	+41	21 57.8	+ 1 53 10	+1.2871	.5335	—.2196	+9.4678	.9804
12	34 Leonis	6	+83	— 9	14 50.6	— 5 46 1	+0.5991	.5181	—.2407	+9.3854	.9868
12	37 Leonis	6	+23	—62	17 22.1	— 3 19 12	—0.4169	.5147	—.2431	+9.3967	.9861
13	l Leonis	5	—30	—79	10 8.1	—11 3 13	—1.2747	.5032	—.2573	+9.2921	.9915
13	MARS		+58	—31	13 25.5	— 7 51 34	+0.2435	.4786	—.2495	+9.1988	.9945
13	χ Leonis	5	+43	—44	18 30.8	— 2 55 2	—0.0264	.5005	—.2623	+9.1492	.9956
14	σ Leonis	4	— 3	—83	3 8.8	+ 5 28 15	—0.9121	.4965	—.2660	+9.0740	.9969
14	VENUS		+ 8	—82	7 53.9	+10 5 23	—0.7406	.4452	—.2475	+8.9796	.9980
14	89 Leonis	6	+65	—26	10 20.9	—11 31 45	+0.3602	.4954	—.2680	+8.8272	.9990
14	β Virginis	3½	+13	—84	19 12.9	— 2 54 28	—0.6304	.4928	—.2691	+8.6513	.9996
14	B.A.C. 4043	6½	+17	—78	23 53.5	+ 1 38 26	—0.5400	.4917	—.2691	+8.3638	.9999
18	B.A.C. 4923	6	+58	—22	23 39.9	— 1 17 48	+0.4175	.5120	—.1927	—9.5497	.9708
19	B.A.C. 5023	6	+26	—52	9 10.6	+ 7 56 28	—0.1196	.5194	—.1771	—9.5712	.9676
19	42 Libræ	5½	+ 9	—71	20 49.0	— 4 46 56	—0.4145	.5264	—.1563	—9.5982	.9629
19	B.A C. 5197	6	+39	—34	23 49.4	— 1 51 33	+0.1965	.5255	—.1507	—9.6138	.9598
20	b Scorpii	5	+65	+14	1 54.5	+ 0 8 45	+1.0003	.5236	—.1458	—9.6111	.9561
20	A Scorpii	5	+47	—25	3 10.7	+ 1 22 31	+0.3539	.5264	—.1436	—9.6243	.9576
20	B.A.C. 5253	6	0	—82	3 20.0	+ 1 31 36	—0.5503	.5300	—.1433	—9.6111	.9604
20	B.A.C. 5254	6	—40	—90	3 21.9	+ 1 33 26	—1.1733	.5322	—.1433	—9.6016	.9622
20	B.A.C. 5255	6	+50	—22	3 27.4	+ 1 38 45	+0.4089	.5267	—.1424	—9.6257	.9573
20	3 Scorpii	6	+38	—34	3 40.7	+ 1 51 35	+0.1953	.5275	—.1421	—9.6231	.9579
20	4 Scorpii	6	+64	+44	4 3.2	+ 2 13 20	+1.2800	.5233	—.1415	—9.6394	.9542
20	B.A.C. 5286	6½	+ 2	—78	5 33.3	+ 3 40 36	—0.5066	.5308	—.1390	—9.6165	.9593
20	π Scorpii	3½	+65	+ 7	5 38.9	+ 3 45 58	+0.8977	.5258	—.1384	—9.6371	.9548
20	B.A.C. 5314	6	+45	—26	7 47.3	+ 5 50 14	+0.3450	.5289	—.1338	—9.6335	.9556
20	B.A.C. 5347	5	+58	—12	10 1.1	+ 7 59 42	+0.5816	.5290	—.1294	—9.6410	.9538
20	σ Scorpii	3½	—25	—90	16 10.0	—10 3 28	—0.9448	.5378	—.1161	—9.6300	.9564
20	α Scorpii	1½	+ 4	—71	19 57.6	— 6 23 23	—0.4069	.5373	—.1075	—9.6437	.9532
20	τ Scorpii	3½	+62	+56	22 53.8	— 3 33 0	+1.2925	.5315	—.1007	—9.6704	.9463
21	B.A.C. 5603	6½	+62	+45	3 4.6	+ 0 29 20	+1.2515	.5330	—.0911	—9.6751	.9449
21	43 Ophiuchi	6	+ 7	—59	20 26.8	— 6 43 56	—0.2373	0.5457	—.0490	—9.6716	9.9459

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				Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
				°	°	h. m.	h. m. s.					
Oct.	22	3 Sagittarii	5	—30	—90	7 15.0	+ 3 41 54	—0.8694	0.5503	—.0218	—9.6684	9.9469
	22	B.A.C. 6063	6½	—17	—90	11 18.2	+ 7 36 36	—0.6383	.5500	—.0117	—9.6722	.9457
	22	B.A.C. 6072	6½	+21	—38	12 8.4	+ 8 25 1	+0.1219	.5468	—.0089	—9.6820	.9429
	22	γ^1 Sagittarii	4	+61	+20	14 56.3	+11 7 4	+1.0424	.5425	—.0019	—9.6935	.9393
	22	B.A.C. 6120	6½	— 1	—83	15 45.1	+11 54 13	—0.2982	.5488	+.0007	—9.6769	.9444
	22	B.A.C. 6127	5	+ 5	—56	16 19.5	—11 32 36	—0.1887	.5486	+.0020	—9.6783	.9440
	22	B.A.C 6190	6½	+20	—39	20 26.1	— 7 34 35	+0.0912	.5477	+.0123	—9.6814	.9431
	22	B.A.C. 6191	6½	+ 1	—65	20 26.4	— 7 34 19	—0.3135	.5496	+.0123	—9.6763	.9446
	22	B.A.C. 6220	6½	+11	—51	22 28.8	— 5 36 13	—0.0999	.5486	+.0175	—9.6786	.9439
	23	φ Sagittarii	3½	—60	—90	8 58.5	+ 4 31 25	—1.2651	.5538	+.0461	—9.6590	.9494
	23	τ Sagittarii	3½	+25	—40	18 23.3	—10 23 28	+0.0879	.5463	+.0691	—9.6698	.9464
	24	B.A.C. 6628	6	+62	+15	2 11.6	— 2 51 32	+0.9895	.5412	+.0892	—9.6736	.9454
	24	B.A.C. 6666	6	+37	—29	4 36.6	— 0 31 31	+0.2686	.5439	+.0941	—9.6611	.9488
	24	ω Sagittarii	5½	+64	+ 6	16 16.9	+10 44 39	+0.8827	.5383	+.1230	—9.6522	.9511
	24	A Sagittarii	5	+64	+11	17 42.4	—11 52 50	+0.9546	.5379	+.1253	—9.6507	.9515
	25	B.A.C. 7049	6	—30	—90	7 44.3	+ 1 40 29	—1.0676	.5419	+.1569	—9.5894	.9645
	25	17 Capricor.	6	— 4	—90	15 26.4	+ 9 7 10	—0.6793	.5377	+.1738	—9.5741	.9671
	25	B.A.C. 7197	6	+45	—31	16 25.8	+10 4 31	+0.2648	.5320	+.1759	—9.5964	.9632
	25	η Capricor.	5½	—11	—90	23 58.8	— 6 37 27	—0.8422	.5351	+.1916	—9.5426	.9718
	26	χ Capricor.	6	+68	+ 9	1 53.9	— 4 46 11	+0.9634	.5286	+.1955	—9.5691	.9679
	26	27 Capricor.	6	+63	—15	2 26.8	— 4 14 19	+0.5539	.5304	+.1959	—9.5568	.9698
	26	φ Capricor.	6	+69	+17	5 14.2	— 2 32 23	+1.0639	.5276	+.2008	—9.5590	.9695
	26	γ Capricor.	3½	+ 4	—89	16 54.0	+ 9 44 38	—0.6445	.5298	+.2210	—9.4734	.9799
	26	δ Capricor.	3	+14	—73	20 13.5	—11 2 21	—0.4611	.5284	+.2231	—9.4602	.9811
	27	ι Aquarii	4½	+ 9	—82	5 35.9	— 1 57 58	—0.5892	.5265	+.2406	—9.4003	.9858
	27	42 Aquarii	6	+19	—70	10 37.2	+ 2 54 47	—0.4241	.5253	+.2476	—9.3694	.9878
	27	45 Aquarii	6	+58	—27	11 40.9	+ 3 55 24	+0.3329	.5233	+.2489	—9.3841	.9869
	27	50 Aquarii	6	+76	+28	14 18.9	+ 6 28 25	+1.2349	.5210	+.2519	—9.3912	.9864
	27	B.A.C. 7835	6½	+77	+33	17 1.1	+ 9 5 25	+1.2880	.5211	+.2554	—9.3726	.9876
	27	σ Aquarii	6½	— 9	—90	17 21.5	+ 9 25 12	—0.9465	.5251	+.2557	—9.2960	.9913
	27	58 Aquarii	6	+11	—83	17 51.3	+ 9 54 5	—0.6009	.5245	+.2564	—9.3045	.9910
	27	64 Aquarii	6½	+15	—76	20 33.4	—11 30 50	—0.5203	.5244	+.2613	—9.2714	.9923
	28	70 Aquarii	6	+79	+25	2 2.2	— 6 10 32	+1.2154	.5209	+.2659	—9.2923	.9915
	28	λ Aquarii	6	—35	—90	4 3.7	— 3 42 33	—1.3053	.5247	+.2675	—9.1613	.9954
	28	81 Aquarii	6	+ 8	—89	8 20.3	— 0 4 24	—0.6763	.5239	+.2716	—9.1339	.9959
	28	82 Aquarii	6	—12	—90	8 53.9	+ 0 28 9	—1.0231	.5242	+.2722	—9.1061	.9964
	28	h^1 Aquarii	6	+70	—21	10 9.4	+ 1 41 12	+0.4733	.5226	+.2735	—9.1676	.9952
	28	h^2 Aquarii	7	+75	—16	10 14.2	+ 1 45 52	+0.5572	.5226	+.2735	—9.1707	.9952
	28	h^3 Aquarii	7	+66	— 2	10 30.1	+ 2 1 14	+0.8168	.5222	+.2740	—9.1798	.9950
	28	h^4 Aquarii	7½	+79	— 6	11 9.3	+ 2 39 17	+0.7458	.5226	+.2741	—9.1676	.9953
	28	φ Aquarii	5	+44	—44	14 37.4	+ 6 0 43	+0.0176	.5235	+.2771	—9.0742	.9969
	28	96 Aquarii	5½	+32	—57	17 4.7	+ 8 23 22	—0.2337	.5241	+.2790	—9.0119	.9977
	28	B.A.C. 8154	6½	+22	—69	18 2.8	+ 9 19 41	—0.4229	.5244	+.2796	—8.9775	.9980
	29	20 Piscium	6	+87	+29	6 52.2	— 2 15 28	+1.2788	.5262	+.2867	—8.7918	.9992
	29	B.A.C. 8276	6½	+ 2	—90	7 18.4	— 1 50 7	—0.8318	.5269	+.2867	—8.3684	9.9999
	29	B.A.C. 8311	6½	+10	—89	10 9.3	+ 0 55 20	—0.6769	.5277	+.2875	—8.0744	0.0000
	29	B.A.C. 8365	6½	+89	+37	15 3.1	+ 5 39 41	+1.3490	.5291	+.2888	—8.3527	9.9999
	29	B.A.C. 57	6½	+90	+ 2	21 3.9	+11 28 48	+0.8856	.5318	+.2894	+8.1961	.9999
	30	60 Piscium	6	+34	—55	10 48.8	+ 0 46 20	—0.2019	.5387	+.2876	+9.0168	.9976
	30	62 Piscium	6	+12	—82	11 12.8	+ 1 9 35	—0.6432	.5384	+.2872	+9.0556	.9972
	30	B.A.C. 221	6	+90	+35	11 13.0	+ 1 9 45	+1.3213	.5402	+.2872	+8.8995	.9986
	30	δ Piscium	5	— 1	—84	11 23.7	+ 1 20 4	—0.8762	.5384	+.2872	+9.0742	.9969
	30	ε Piscium	4	+88	— 9	17 53.2	+ 7 36 20	+0.6682	.5440	+.2841	+9.0936	.9966
	31	π Piscium	5	+85	— 9	8 57.5	— 1 50 49	+0.6274	.5556	+.2714	+9.2965	.9913
	31	104 Piscium	6½	—28	—77	9 51.6	— 0 58 31	—1.2454	0.5520	+.2711	+9.3703	9.9877

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s.					
Nov. 1	27 Arietis	6	+90	+ 8	7 25.9	— 4 12 13	+0.8442	0.5791	+.2361	+9.4423	9.9827
1	B.A.C. 782	6½	+42	—39	8 30.2	— 3 10 23	—0.0536	.5743	+.2353	+9.4959	.9776
1	*μ* Arietis	5½	+25	—55	11 58.5	+ 0 9 49	—0.3717	.5756	+.2303	+9.5215	.9746
1	47 Arietis	6	+65	—17	18 11.9	+ 6 8 35	+0.3434	.5703	+.2171	+9.5361	.9727
1	*ι* Arietis	4½	+33	—45	18 38.6	+ 6 34 13	—0.2193	.5823	+.2158	+9.5498	.9708
2	*ζ* Arietis	4½	+90	+50	0 44.0	—11 34 56	+1.3011	.5932	+.2016	+9.5447	.9715
2	66 Arietis	6½	+81	— 3	5 52.2	— 6 39 23	+0.5448	.5947	+.1884	+9.5795	.9662
2	7 Tauri	6	+ 7	—66	8 6.2	— 4 30 51	—0.6780	.5908	+.1824	+9.6091	.9608
2	9 Tauri	6	+90	+ 7	9 4.8	— 3 34 42	+0.7189	.5979	+.1794	+9.5872	.9649
2	11 Tauri	6	—23	—65	10 27.8	— 2 15 7	—1.1136	.5908	+.1754	+9.6238	.9577
2	*g* Pleiadum	5½	+53	—21	11 59.6	— 0 47 13	+0.1523	.5974	+.1710	+9.6067	.9612
2	*b* Pleiadum	4½	+65	—12	12 1.4	— 0 45 28	+0.3294	.5982	+.1710	+9.6036	.9618
2	*m* Pleiadum	7	+25	—48	12 6.9	— 0 40 10	—0.3659	.5949	+.1711	+9 6160	.9594
2	*ι* Tauri	5	+45	—29	12 8.3	— 0 38 47	+0.0025	.5967	+.1710	+9.6097	.9607
2	*c* Pleiadum	5	+53	—22	12 22.3	— 0 25 26	+0.1373	.5975	+.1705	+9.6080	.9610
2	*k* Pleiadum	7½	+42	—31	12 23.9	— 0 24 3	—0.0415	.5966	+.1702	+9.6112	.9603
2	*l* Pleiadum	7½	+44	—29	12 27.1	— 0 20 51	—0.0064	.5968	+.1701	+9.6107	.9604
2	*d* Pleiadum	5	+84	+ 1	12 34.0	— 0 14 11	+0.5810	.5997	+.1698	+9.6008	.9624
2	12 Pleiadum	7½	+48	—26	12 48.2	— 0 0 38	+0.0582	.5972	+.1693	+9.6106	.9604
2	*p* Pleiadum	7½	+75	— 5	12 56.7	+ 0 7 33	+0.4765	.5994	+.1687	+9.6038	.9618
2	*η* Tauri	3	+77	— 4	12 59.7	+ 0 10 25	+0.4957	.5994	+.1686	+9.6036	.9618
2	28 Pleiadum	7	+90	+30	13 19.8	+ 0 29 42	+1.06:5	.6030	+.1677	+9.5916	.9641
2	*s* Pleiadum	7½	+90	+14	13 32.6	+ 0 41 54	+0.8247	.6014	+.1674	+9.5993	.9627
2	*f* Pleiadum	4½	+90	+ 4	13 37.2	+ 0 46 20	+0 6460	.6005	+.1673	+9.6027	.9620
2	*h* Pleiadum	5½	+83	0	13 37.6	+ 0 46 47	+0.5655	.6001	+.1673	+9.6042	.9617
2	34 Pleiadum	7½	+90	+27	13 50.2	+ 0 58 48	+1.0142	.6025	+.1670	+9.5968	.9631
2	B.A.C. 1192	6½	+ 1	—65	14 1.1	+ 1 9 14	—0.7822	.5939	+.1622	+9.6284	.9567
2	40 Pleiadum	7½	+90	+15	14 15.5	+ 1 23 2	+0.8372	.6019	+.1651	+9.6013	.9623
2	*p* Tauri	6	+13	—57	21 33.5	+ 8 22 33	—0.5655	.6005	+.1424	+9 6436	.9532
3	*φ* Tauri	5	—13	—63	1 0.4	+11 40 30	—0.9757	.5991	+.1319	+9.6572	.9498
3	*χ* Tauri	5½	+90	+18	1 51.0	—11 31 0	+1.8191	.6097	+.1289	+9.6307	.9562
3	B.A.C. 1648	6½	+63	— 4	22 43.4	+ 8 26 41	+0.3011	.6131	+.0576	+9.6689	.9467
4	*β* Tauri	2	+30	—32	0 35.5	+10 13 47	—0.2642	.6101	+.0505	+9.6784	.9440
4	B.A.C. 1709	6½	— 1	—61	1 46.8	+11 21 57	—0.7869	.6070	+.0467	+9.6866	.9415
4	B.A.C. 1746	6½	+90	+24	4 2.8	—10 28 2	+0.7973	.6159	+.0380	+9.6654	.9477
4	B.A.C. 1772	6	+ 4	—60	5 12.5	— 9 21 26	—0.7086	.6068	+.0344	+9.6874	.9413
4	136 Tauri	5	+90	+36	10 14.9	— 4 32 15	+0.9610	.6156	+ 0163	+9.6655	.9476
4	B.A.C. 1882	6½	+25	—34	11 22.2	— 3 27 55	—0.3544	.6076	+.0114	+9.6844	.9422
4	*ϰ* Aurigæ	4	—16	—61	18 6.7	+ 2 58 55	—0.9836	.6023	—.0116	+9.6930	.9395
4	B.A.C. 2097	6½	+53	— 8	23 33.9	+ 8 11 55	+0.1367	.6057	—.0139	+9.6759	.9447
5	49 Aurigæ	6½	+60	— 4	1 19.8	+ 9 53 17	+0.2535	.6051	—.0347	+9.6735	.9454
5	53 Aurigæ	6½	0	—61	2 18.1	+10 48 35	—0.7630	.5989	—.0409	+9.6870	.9414
5	54 Aurigæ	6	+41	—21	2 54.8	+11 24 11	—0.0631	.6025	—.0419	+9.6770	.9444
5	28 Geminor.	6	— 7	—61	4 48.3	—10 47 13	—0.8768	.5967	—.0487	+9.6871	.9413
5	47 Geminor.	6	+82	+ 5	14 45.6	— 1 15 4	+0.5102	.5975	—.0810	+9.6584	.9496
5	53 Geminor.	6	+ 5	—61	16 27.5	+ 0 22 34	—0.6954	.5889	— 0864	+9.6736	.9453
5	59 Geminor.	6½	+ 1	—62	19 44.1	+ 3 30 8	—0.7270	.5862	—.0967	+9.6703	.9463
5	*ι* Geminor.	4	—14	—62	20 11.3	+ 3 57 10	—0.9750	.5846	—.0972	+9.6727	.9456
6	*υ* Geminor.	5	+16	—51	0 7.9	+ 7 44 10	—0.5053	.5831	—.1087	+9.6602	.9490
6	*c* Geminor.	6	+59	—13	3 20.9	+10 49 26	+0.2329	.5843	—.1177	+9.6437	.9532
6	*φ* Geminor.	5	—42	—63	7 1.4	— 9 38 46	—1.2503	.5730	—.1285	+9.6590	.9494
6	*ω*¹ Cancri	6	+30	—40	10 1.2	— 6 46 6	—0.2731	.5748	—.1367	+9.6384	.9545
6	*ω*² Cancri	6½	+44	—27	10 21.0	— 6 27 3	—0.0086	.5757	—.1369	+9.6336	.9555
6	*ψ*¹ Cancri	6½	—49	—64	13 45.5	— 3 10 24	—1.2942	.5661	—.1452	+9.6459	.9527
6	*ψ*² Cancri	4	—13	—64	13 51.8	— 3 4 23	—0.9789	0.5675	—.1461	+9.6409	9.9539

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			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Nov. 6	λ Cancri	6	+39	—34	18 1.7	+ 0 55 59	—0.1059	0.5673	—.1562	+9.6172	9.9591
6	υ^1 Cancri	7	—18	—65	20 33.6	+ 3 22 13	—1.0540	.5602	—.1632	+9.6257	.9573
6	υ^2 Cancri	6½	0	—66	21 23.0	+ 4 9 44	—0.7953	.5603	—.1651	+9.6196	.9586
6	B.A.C. 2840	7	—20	—65	21 49.2	+ 4 35 1	—1.0758	.5592	—.1654	+9.6230	.9579
6	υ^3 Cancri	6	— 9	—66	22 36.1	+ 5 20 9	—0.9404	.5610	—.1680	+9.6187	.9588
7	γ Cancri	4½	+90	+13	3 39.3	+10 12 12	+0.8436	.5601	—.1783	+9.5732	.9672
8	8 Leonis	6½	+90	+24	3 50.9	+ 9 33 36	+1.1026	.5356	—.2207	+9.4678	.9804
8	34 Leonis	6	+70	—19	20 35.0	+ 1 45 43	+0.4234	.5182	—.2407	+9.3854	.9868
8	37 Leonis	6	+14	—72	23 5.6	+ 4 11 43	—0.5869	.5142	—.2431	+9.3967	.9861
10	χ Leonis	5	+35	—53	0 11.7	+ 4 33 15	—0.1842	.4994	—.2606	+9.1492	.9956
10	σ Leonis	4	—13	—83	8 50.7	+ 2 57 36	—1.0613	.4944	—.2637	+9.0739	.9969
10	τ Leonis	5	+90	+42	12 32.7	— 7 26 37	+1.3785	.4948	—.2648	+8.8027	.9991
10	89 Leonis	6	+56	—33	16 4.3	— 4 0 54	+0.2171	.4931	—.2655	+8.8271	.9990
11	β Virginis	3½	+ 5	—81	0 58.9	+ 4 38 42	—0.7641	.4904	—.2665	+8.6511	.9996
11	B.A.C. 4043	6½	+10	—87	5 41.0	+ 9 13 19	—0.6684	.4895	—.2636	+8.3634	.9999
11	B.A.C. 4200	6½	+86	—10	21 43.6	+ 0 49 46	+0.6858	.4880	—.2642	—8.8243	.9990
11	B.A.C. 4225	6½	+82	—13	23 50.1	+ 2 52 48	+0.6117	.4880	—.2635	—8.8715	.9988
12	*f* Virginis	6	+85	— 8	2 42.3	+ 5 40 24	+0.7131	.4880	—.2625	—8.9444	.9983
12	B.A.C. 4255	6½	—21	—90	3 47.5	+ 6 43 47	—1.1695	.4894	—.2623	—8.7965	.9992
12	B.A.C. 4294	6½	+27	—63	8 42.2	+11 30 29	—0.3339	.4891	—.2603	—8.9833	.9980
12	B.A.C. 4394	5½	+24	—65	20 20.6	— 1 10 5	—0.3609	.4907	—.2537	—9.1553	.9953
12	50 Virginis	6	+81	+ 6	21 0.1	— 0 31 42	+0.9559	.4897	—.2531	—9.2207	.9939
13	58 Virginis	6	+49	—39	1 15.2	+ 3 36 25	+0.1157	.4917	—.2534	—9.2308	.9936
13	α Virginis	1	+30	—58	5 29.6	+ 7 43 49	—0.2360	.4936	—.2473	—9.2572	.9928
13	*i* Virginis	5	+78	+30	6 19.3	+ 8 32 10	+1.2671	.4913	—.2467	—9.3166	.9905
13	B.A C. 4531	6	+73	— 4	10 39.3	—11 15 5	+0.7779	.4936	—.2433	—9.3348	.9896
14	B.A C. 4679	6½	—15	—90	2 39.4	+ 4 18 4	—1.0021	.5027	—.2275	—9.3923	.9864
14	B.A.C. 4700	5½	+24	—60	6 1.0	+ 7 33 56	—0.2740	.5031	—.2238	—9.4304	.9836
14	B.A.C. 4722	6	+73	+38	8 23.8	+ 9 52 36	+1.3092	.5005	—.2208	—9.4789	.9793
17	B.A.C. 5800	6½	—51	—90	22 33.4	— 2 41 30	—1.2023	.5506	—.0577	—9.6542	.9506
18	43 Ophiuchi	6	+14	—50	2 36.9	+ 1 13 42	—0.0937	.5468	—.0475	—9.6716	.9459
18	3 Sagittarii	5	—21	—90	13 25.4	+ 7 39 44	—0.7126	.5519	—.0197	—9.6684	.9469
18	B.A.C. 6063	6½	— 9	—77	17 28.6	— 8 25 31	—0.4759	.5508	—.0095	—9.6722	.9457
18	B.A.C. 6072	6½	+30	—28	18 18.9	— 7 36 58	+0.2876	.5473	—.0077	—9.6819	.9429
18	γ^1 Sagittarii	4	+61	+41	21 7.0	— 4 54 41	+1.2157	.5432	—.0006	—9.6935	.9393
18	B.A.C. 6120	6½	+ 8	—52	21 56.0	— 4 7 25	—0.1277	.5496	+.0019	—9.6769	.9444
18	B.A.C. 6127	5	+14	—45	22 30.5	— 3 34 10	—0.0170	.5491	+.0034	—9.6782	.9440
19	B.A.C 6190	6½	+30	—29	2 37.7	+ 0 24 29	+0.2686	.5477	+.0141	—9.6814	.9431
19	B.A.C. 6191	6½	+ 8	—53	2 38.0	+ 0 24 44	—0.1374	.5496	+.0141	—9.6763	.9446
19	B.A.C. 6220	6½	+20	—40	4 40.7	+ 2 13 13	+0.0798	.5487	+.0197	—9.6786	.9439
19	φ Sagittarii	3½	—41	—90	15 12.3	—11 26 19	—1.0773	.5530	+.0460	—9.6590	.9494
20	τ Sagittarii	3½	+36	—28	0 41.9	— 2 17 24	+0.2928	.5452	+.0701	—9.6698	.9464
20	B.A.C. 6628	6	+62	+37	8 34.3	+ 5 18 39	+1.2090	.5392	+.0901	—9.6736	.9454
20	B.A.C. 6666	6	+50	—17	11 0.8	+ 7 40 12	+0.4867	.5415	+.0955	—9.6611	.9488
20	ω Sagittarii	5½	+64	+25	22 49.8	— 4 54 55	+1.1179	.5351	+.1234	—9.6522	.9511
21	A Sagittarii	5	+64	+33	0 16.5	— 3 31 9	+1.1927	.5345	+.1260	—9.6507	.9515
21	B.A.C. 7049	6	—14	—90	14 32.6	+10 16 25	—0.8353	.5367	+.1573	—9.5894	.9645
21	17 Capricor.	6	+ 9	—72	22 24.2	— 6 7 27	—0.4386	.5319	+.1734	— 9.5741	.9671
21	B.A C. 7197	6	+67	+18	23 24.8	— 5 8 49	+1.0637	.5261	+.1754	—9.5964	.9632
22	η Capricor.	5½	+ 3	—85	7 8.2	+ 2 19 35	—0.5987	.5285	+.1890	—9.5426	.9718
22	χ Capricor.	6	+68	+32	9 6.0	+ 4 13 38	+1.2286	.5223	+.1929	—9.5691	.9679
22	27 Capricor.	6	+67	—10	9 35.0	+ 4 41 40	+0.6338	.5239	+.1937	—9.5568	.9698
22	φ Capricor.	6	+69	+47	12 31.4	+ 7 32 28	+1.3320	.5208	+.1988	—9.5590	.9695
23	γ Capricor.	3½	+17	—68	0 30.2	— 4 51 27	—0.3933	.5216	+.2181	—9.4734	.9799
23	δ Capricor.	3	+27	—56	3 55.5	— 1 32 37	—0.2061	0.5202	+.2233	—9.4602	9.9811

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			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log. cos *D*
			°	°	h. m.	h. m. s.					
Nov. 23	ι Aquarii	4½	+22	—64	13 35.1	+ 7 49 0	—0.3370	0.5177	+.2371	—9.4003	9.9858
23	42 Aquarii	6	+31	—54	18 46.1	—11 9 34	—0.1706	.5160	+.2433	—9.3695	.9878
23	45 Aquarii	6	+73	—14	19 51.8	—10 5 50	+0.5975	.5144	+.2447	—9.3840	.9869
24	σ Aquarii	4½	+ 5	—90	1 43.7	— 4 24 45	—0.7031	.5161	+.2515	—9.2961	.9913
24	58 Aquarii	6	+24	—63	2 14.6	— 3 54 49	—0.3332	.5154	+.2519	—9.3045	.9910
24	64 Aquarii	6½	+28	—60	6 4.3	— 0 12 7	—0.2724	.5149	+.2560	—9.2714	.9923
24	λ Aquarii	4	—16	—90	12 47.9	+ 6 19 14	—1.0738	.5155	+.2624	—9.1613	.9954
24	78 Aquarii	6	—36	—90	13 47.4	+ 7 16 51	—1.3113	.5156	+.2631	—9.1413	.9958
24	81 Aquarii	6	+21	—70	17 13.4	+10 36 39	—0.4379	.5146	+.2659	—9.1339	.9959
24	82 Aquarii	6	+ 2	—90	17 48.2	+11 10 24	—0.7907	.5150	+.2668	—9.1061	.9964
24	h^1 Aquarii	6	+81	— 7	19 6.3	—11 33 56	+0.7283	.5133	+.2677	—9.1676	.9953
24	h^2 Aquarii	7	+68	— 2	19 11.7	—11 28 39	+0.8132	.5130	+.2676	—9.1706	.9952
24	h^3 Aquarii	7	+82	+13	19 24.5	—11 6 23	+1.0622	.5128	+.2682	—9.1765	.9951
24	h^4 Aquarii	7½	+82	+ 9	20 8.4	—10 33 43	+1.0040	.5127	+.2683	—9.1676	.9952
24	φ Aquarii	5	+58	—31	23 43.6	— 7 5 2	+0.2611	.5140	+.2712	—9.0743	.9969
25	96 Aquarii	5½	+43	—46	2 11.1	— 4 42 11	—0.0193	.5147	+.2730	—9.0120	.9977
25	B.A.C. 8131	6½	+34	—55	3 16.4	— 3 38 48	—0.1894	.5148	+.2737	—8.9775	.9980
25	B.A.C. 8276	6½	+13	—84	16 59.4	+ 9 29 0	—0.6222	.5178	+.2806	—8.3685	9.9999
25	B.A.C. 8311	6½	+21	—72	19 56.1	—11 29 46	—0.4691	.5185	+.2814	—8.0747	0.0000
26	B.A.C. 57	6½	+90	+15	7 12.2	— 0 34 51	+1.0985	.5233	+.2833	+8.1959	9.9999
26	60 Piscium	6	+43	—45	21 21.6	—10 52 41	—0.0330	.5307	+.2814	+9.0168	.9976
26	62 Piscium	6	+20	—71	21 46.3	—10 28 47	—0.4803	.5308	+.2812	+9.0556	.9972
26	δ Piscium	5	+ 8	—83	21 57.4	—10 18 0	—0.7167	.5307	+.2811	+9.0742	.9969
27	ε Piscium	4	+90	0	4 37.2	— 3 51 22	+0.8326	.5373	+.2783	+9.0936	.9966
27	π Piscium	5	+90	— 2	20 2.0	+11 1 43	+0.7527	.5498	+.2668	+9.2965	.9913
27	104 Piscium	6½	—20	—77	20 57.1	+11 55 6	—1.1390	.5464	+.2657	+9.3703	.9877
28	26 Arietis	6½	—31	—71	18 40.8	+ 8 51 18	—1.2406	.5662	+.2358	+9.5176	.9751
28	27 Arietis	6	+90	+11	18 49.5	+ 8 59 40	+0.9077	.5734	+.2355	+9.4678	.9804
28	B.A.C. 782	6½	+45	—36	19 54.3	+10 2 2	+0.0022	.5717	+.2336	+9.4959	.9776
28	μ Arietis	5½	+27	—52	23 25.9	—10 34 27	—0.3176	.5746	+.2266	+9.5215	.9746
29	47 Arietis	6	+67	—15	5 39.4	— 4 35 35	+0.3765	.5834	+.2140	+9.5361	.9727
29	ε Arietis	4½	+34	—43	6 6.1	— 4 9 54	—0.1883	.5814	+.2132	+9.5498	.9708
29	ζ Arietis	4½	+90	+53	12 12.1	+ 1 41 29	+1.3171	.5933	+.1992	+9.5447	.9715
29	66 Arietis	6½	+80	— 3	17 19.9	+ 6 36 43	+0.5460	.5994	+.1863	+9.5605	.9692
29	7 Tauri	6	+ 7	—66	19 33.5	+ 8 44 49	—0.6809	.5926	+.1801	+9.6091	.9608
29	9 Tauri	6	+90	+ 7	20 31.9	+ 9 40 42	+0.7114	.6001	+.1775	+9.5872	.9649
29	11 Tauri	6	—24	—65	21 54.5	+10 59 54	—1.1249	.5921	+.1728	+9.6238	.9577
29	*g* Pleiadum	5½	+53	—22	23 25.7	—11 32 43	+0.1381	.5997	+.1693	+9.6067	.9612
29	*b* Pleiadum	4½	+64	—13	23 27.5	—11 30 59	+0.3147	.6007	+.1692	+9.6036	.9618
29	ε Tauri	5	+44	—29	23 34.5	—11 24 21	—0.0117	.5993	+.1687	+9.6097	.9607
29	*c* Pleiadum	5	+52	—23	23 47.3	—11 12 4	+0.1228	.6137	+.1680	+9.6080	.9610
30	*d* Pleiadum	5	+83	0	0 0.0	—11 0 32	+0.5634	.6018	+.1679	+9.6008	.9624
30	η Tauri	3	+75	— 4	0 25.5	—10 35 27	+0.4782	.6025	+.1660	+9.6036	.9618
30	*f* Pleiadum	4½	+89	+ 3	1 2.8	— 9 59 44	+0.6268	.6033	+.1649	+9.6027	.9620
30	*h* Pleiadum	5½	+82	— 1	1 3.2	— 9 59 20	+0.5462	.5982	+.1649	+9.6211	.9583
30	B.A.C. 1192	6½	+ 1	—65	1 26.4	— 9 37 4	—0.7838	.5968	+.1635	+9.6284	.9567
30	φ Tauri	5	—16	—63	12 19.6	+ 0 47 59	—1.0174	.6034	+.1304	+9.6572	.9498
30	χ Tauri	5½	+90	+15	13 9.6	+ 1 35 50	+0.7663	.6140	+.1272	+9.6307	.9562
Dec. 1	B.A.C. 1648	6½	+57	— 9	9 40.6	— 2 47 53	+0.2007	.6201	+.0563	+9.6689	.9467
1	β Tauri	2	+24	—38	11 30.3	— 1 3 10	—0.3631	.6171	+.0489	+9.6784	.9440
1	B.A.C. 1709	6½	— 8	—61	12 40.0	+ 0 3 26	—0.8819	.6144	+.0451	+9.6866	.9415
1	B.A.C. 1746	6½	+90	+18	14 52.8	+ 2 10 15	+0.6792	.6235	+.0365	+9.6654	.9477
1	B.A.C. 1772	6	— 3	—61	16 0.9	+ 3 15 15	—0.8125	.6147	+.0321	+9.6874	.9413
1	136 Tauri	5	+90	+28	20 56.0	+ 7 57 0	+0.8261	.6233	+.0136	+9.6655	.9476
1	B.A.C. 1882	6½	+17	—42	22 1.6	+ 8 59 37	—0.4755	0.6164	+.0098	+9.6844	9.9422

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Dec. 2	κ Aurigæ	4	−27	−61	4 35.8	− 8 44 23	−1.1102	0.6107	−.0140	+9.6930	9.9395
2	B.A.C. 2097	6½	+44	−17	9 53.1	− 3 40 47	−0.0423	.6148	−.0337	+9.6759	.9447
2	49 Aurigæ	6½	+50	−12	11 35.9	− 2 2 32	+0.0963	.6147	−.0392	+9.6735	.9454
2	53 Aurigæ	6½	−10	−61	12 42.1	− 0 59 14	−0.9090	.6083	−.0425	+9.6870	.9414
2	54 Aurigæ	6	+32	−29	13 8.1	− 0 34 28	−0.2206	.6115	−.0450	+9.6782	.9440
2	28 Geminor.	6	−19	−61	14 58.2	+ 1 10 46	−1.0264	.6062	−.0522	+9.6871	.9413
3	47 Geminor.	6	+65	− 5	0 36.7	+10 24 7	+0.3204	.6073	−.0844	+9.6584	.9496
3	53 Geminor.	6	− 6	−62	2 15.3	+11 58 27	−0.8620	.5992	−.0894	+9.6736	.9453
3	59 Geminor.	6½	−11	−62	5 25.5	− 8 59 26	−0.9411	.5964	−.0997	+9.6703	.9463
3	ι Geminor.	4½	−30	−62	5 51.4	− 8 34 38	−1.1514	.5947	−.1010	+9.6727	.9456
3	υ Geminor.	5	+ 5	−62	9 40.6	− 4 55 9	−0.6967	.5935	−.1134	+9.6602	.9490
3	c Geminor.	6	+46	−23	12 47.2	− 1 56 16	+0.0232	.5942	−.1219	+9.6437	.9532
3	ω^1 Cancri	6	+18	−45	19 13.9	+ 4 14 36	−0.4850	.5854	−.1405	+9.6384	.9545
3	ω^2 Cancri	6½	+32	−38	19 33.1	+ 4 32 59	−0.2269	.5854	−.1419	+9.6336	.9555
3	ψ^2 Cancri	4	−31	−64	22 56.9	+ 7 48 38	−1.1864	.5775	−.1509	+9.6409	.9539
4	λ Cancri	6	+26	−46	2 58.1	+11 40 21	−0.3352	.5769	−.1611	+9.6172	.9591
4	υ^1 Cancri	7	−41	−65	5 24.9	− 9 58 34	−1.2703	.5701	−.1675	+9.6258	.9573
4	υ^2 Cancri	6½	−15	−66	6 12.6	− 9 9 43	−1.0186	.5705	−.1687	+9.6196	.9586
4	B.A.C. 2840	7	−45	−66	6 38.0	− 8 48 19	−1.2936	.5684	−.1699	+9.6229	.9579
4	υ^3 Cancri	6	−28	−66	7 23.3	− 8 4 46	−1.1639	.5681	−.1717	+9.6187	.9588
4	γ Cancri	4½	+84	− 1	12 16.3	− 3 22 54	+0.5825	.5705	−.1827	+9.5731	.9672
5	83 Cancri	6	+90	+47	3 35.3	+11 22 34	+1.3065	.5538	−.2125	+9.4970	.9775
5	8 Leonis	6½	+90	+ 5	11 41.8	− 4 47 47	+0.8076	.5430	−.2246	+9.4678	.9804
6	34 Leonis	6	+51	−33	3 57.7	+10 56 5	+0.1248	.5249	−.2440	+9.3853	.9868
6	37 Leonis	6	− 2	−76	6 24.5	−10 41 51	−0.8732	.5204	−.2468	+9.3967	.9861
7	χ Leonis	5	+20	−71	6 57.1	−10 53 45	−0.4838	.5033	−.2620	+9.1491	.9956
7	σ Leonis	4	−38	−84	15 27.3	− 2 38 22	−1.3515	.4978	−.2651	+9.0738	.9969
7	τ Leonis	5	+90	+14	19 5.8	+ 0 53 57	+1.0674	.4981	−.2656	+8.8025	.9991
7	89 Leonis	6	+40	−48	22 34.4	+ 4 16 37	−0.0822	.4956	−.2662	+8.8269	.9990
8	β Virginis	3½	−12	−88	7 22.1	−11 10 27	−1.0496	.4927	−.2666	+8.6509	.9996
8	B.A.C. 4043	6½	− 6	−89	12 1.1	− 6 39 5	−0.9513	.4914	−.2664	+8.3629	.9999
9	B.A.C. 4200	6½	+68	−23	3 55.9	+ 8 49 29	+0.4117	.4888	−.2626	−8.8245	.9990
9	B.A.C. 4225	6½	+63	−27	6 1.6	+10 51 45	+0.3409	.4887	−.2620	−8.8717	.9988
9	f Virginis	6	+69	−28	8 52.9	−10 21 36	+0.4458	.4884	−.2608	−8.9446	.9983
9	B.A.C. 4205	6½	−78	−90	9 57.7	− 9 18 35	−1.4270	.4896	−.2605	−8.7967	.9992
9	B.A.C. 4294	6½	+14	−81	14 51.0	− 4 33 13	−0.5877	.4894	−.2587	−8.9834	.9980
10	B.A.C. 4394	5½	+12	−81	2 27.4	+ 6 44 10	−0.5958	.4955	−.2518	−9.1554	.9995
10	50 Virginis	6	+80	− 7	3 6.8	+ 7 22 27	+0.7188	.4896	−.2511	−9.2208	.9939
10	58 Virginis	6	+37	−49	7 21.5	+11 30 12	−0.0923	.4913	−.2483	−9.2309	.9936
10	α Virginis	1	+19	−71	11 35.8	− 8 22 32	−0.4546	.4928	−.2453	−9.2573	.9928
10	i Virginis	5	+78	+12	12 25.3	− 6 34 21	+1.0467	.4907	−.2445	−9.3167	.9905
10	B.A C. 4031	6	+73	−15	16 45.2	− 3 21 39	+0.5672	.4924	−.2411	−9.3348	.9896
11	B.A.C. 4679	6½	−28	−90	8 45.8	−11 48 6	−1.1771	.5017	−.2254	−9.3923	.9864
11	B.A.C. 4700	5½	+16	−71	12 7.7	− 7 32 0	−0.4415	.5023	−.2208	−9.4304	.9836
11	B.A.C. 4722	6	+73	+22	14 30.6	− 6 13 10	+1.1461	.4992	−.2185	−9.4789	.9793
11	B.A.C. 4739	6½	+72	+47	16 11.8	− 4 34 56	+1.3562	.4998	−.2161	−9.4912	.9781
12	B.A.C. 4923	6	+51	−26	12 2.8	− 9 19 3	+0.3393	.5130	−.1883	−9.5497	.9708
12	B.A.C. 5023	6	+24	−54	21 34.0	− 0 5 16	−0.1583	.5194	−.1735	−9.5712	.9676
13	42 Libræ	5½	+ 9	−70	9 12.1	+11 11 3	−0.4048	.5275	−.1518	−9.5982	.9629
13	B.A.C. 5197	6	+40	−32	11 50.7	−10 15 25	+0.2171	.5259	−.1479	−9.6138	.9598
13	b Scorpii	5	+65	+17	14 17.0	− 7 53 47	+1.0297	.5249	−.1420	−9.6311	.9561
13	A Scorpii	5	+48	−23	15 33.1	− 6 40 8	+0.3894	.5285	−.1394	−9.6243	.9576
13	B.A.C. 5253	6	+ 2	−79	15 42.4	− 6 31 5	−0.5144	.5319	−.1391	−9.6111	.9604
13	B.A.C. 5254	6	−37	−90	15 44.3	− 6 29 16	−1.1374	.5341	−.1391	−9.6016	.9622
13	B.A.C. 5255	6	+51	−20	15 49.8	− 6 23 56	+0.4458	0.5281	−.1391	−9.6257	9.9573

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		*H*	*Y*	*p′*	*q′*	Log sin *D*	Log cos *D*
			°	°	h. m.	h. m. s					
Dec. 13	3 Scorpii	6	+40	—32	16 3.0	— 6 11 10	+0.2331	0 5289	—.1385	—9.6231	9.9579
13	4 Scorpii	6	+64	+64	16 25.5	— 5 49 26	+1.3195	.5252	—.1375	—9.6394	.9542
13	B.A.C. 5286	6½	+ 4	—74	17 55.4	— 4 22 25	—0.4619	.5326	—.1344	—9 6165	.9593
13	π Scorpii	3½	+65	+10	18 0.9	— 4 17 3	+0.9437	.5271	—.1344	—9.6371	.9548
13	B.A.C. 5314	6	+48	—22	20 9.0	— 2 13 8	+0.3995	.5303	—.1304	—9.6335	.9556
13	B.A.C. 5347	5	+62	— 8	22 22.4	— 0 4 5	+0.6451	.5310	—.1252	—9.6410	.9538
14	σ Scorpii	3½	—20	—90	4 30.2	+ 5 51 37	—0.8573	.5403	—.1125	—9.6300	.9564
14	α Scorpii	1½	+ 8	—64	8 16.9	+ 9 30 48	—0.3038	.5396	—.1041	—9.6437	.9532
17	τ Sagittarii	3½	+45	—19	6 31.6	+ 5 19 40	+0.4493	.5472	+.0719	—9.6698	.9464
17	B.A.C. 6562	6½	—54	—90	9 22.6	+ 8 4 47	—1.2391	.5544	+.0797	—9.6441	.9531
17	B.A.C. 6666	6	+61	— 7	16 48.1	— 8 45 6	+0.6647	.5440	+.0969	—9.6611	.9488
17	h^2 Sagittarii	4½	—65	—90	19 56.7	— 5 43 1	—1.2987	.5503	+.1064	—9.6291	.9566
18	B.A.C. 7049	6	— 1	—84	20 17.7	— 6 11 7	—0.6044	.5374	+.1592	—9.5894	.9645
19	17 Capricor.	6	+22	—55	4 10.2	+ 1 25 56	—0.1920	.5322	+.1748	—9.5741	.9671
19	B.A.C. 7197	6	+67	+48	5 11.0	+ 2 24 45	+1.3168	.5262	+.1768	—9.5964	.9632
19	η Capricor.	5½	+16	—65	12 56.3	+ 9 55 7	—0.3377	.5282	+.1904	—9.5426	.9718
19	27 Capricor.	6	+69	+ 6	15 23.9	—11 41 58	+0.9045	.5228	+.1954	—9.5568	.9698
20	γ Capricor.	3½	+32	—50	6 26.4	+ 2 52 12	—0.1051	.5192	+.2191	- 9.4734	.9799
20	δ Capricor.	3	+42	—40	9 54.0	+ 6 13 19	+0.0880	.5177	+.2238	—9.4602	.9811
20	ι Aquarii	4½	+37	—46	19 41.1	— 8 17 28	—0.0323	.5143	+.2363	—9.4003	.9858
21	42 Aquarii	6	+47	—37	0 56.0	— 3 12 13	+0.1367	.5128	+.2429	—9.3695	.9878
21	45 Aquarii	6	+76	+ 5	2 3.9	— 2 6 16	+0.9175	.5108	+.2439	—9 3842	.9869
21	σ Aquarii	4½	+21	—67	8 2.0	+ 3 41 4	—0.3909	.5115	+.2504	—9.2961	.9913
21	58 Aquarii	6	+40	—45	8 33.5	+ 4 11 35	—0 0170	.5104	+.2505	—9.3046	.9910
21	64 Aquarii	6½	+39	—42	12 27.6	+ 7 58 40	+0.0472	.5098	+ 2542	—9.2714	.9923
21	λ Aquarii	4	+ 3	—90	19 20.0	— 9 21 11	—0.7602	.5097	+.2599	—9.1613	.9954
21	78 Aquarii	6	— 4	—90	20 20.8	— 8 22 12	—0.8942	.5097	+.2609	—9.1404	.9958
21	81 Aquarii	6	+37	—51	23 51.0	— 4 58 13	—0.1153	.5086	+.2634	—9.1339	.9959
22	82 Aquarii	6	+19	—72	0 27.4	— 4 22 57	—0.4723	.5088	+.2642	- 9.1061	.9964
22	h^1 Aquarii	6	+82	+13	1 47.4	— 3 5 19	+1.0659	.5070	+.2646	—9.1677	.9953
22	h^2 Aquarii	7	+82	+20	1 52.4	— 3 0 23	+1.1570	.5068	+.2651	—9.1707	.9952
22	h^3 Aquarii	7	+82	+51	2 9.8	— 2 43 31	+1.4207	.5065	+.2651	—9.1799	.9950
22	h^4 Aquarii	7½	+82	+38	2 51.0	— 2 3 36	+1.3456	.5067	+.2660	—9.1676	.9952
22	φ Aquarii	5	+79	—15	6 31.8	+ 1 30 42	+0.5942	.5049	+.2680	—9 0743	.9969
22	96 Aquarii	5½	+62	—28	9 8.3	+ 4 2 34	+0.3331	.5076	+.2694	—9.0120	.9977
22	B.A.C. 8134	6½	+50	—38	10 10.1	+ 5 2 34	+0.1200	.5079	+.2698	—8.9776	.9980
23	B A.C. 8276	6½	+29	—54	0 17.3	— 5 15 29	—0.3056	.5098	+.2754	—8.3686	9.9999
23	B.A.C. 8311	6½	+37	—53	3 19.5	— 2 18 42	—0.1510	.5103	+.2765	—8.0754	0.0000
23	B.A.C. 57	6½	+90	+53	14 58.0	+ 8 58 44	+1.4326	.5141	+.2776	+8.1957	9.9999
24	60 Piscium	6	+59	—30	5 37.6	— 0 48 54	+0.2645	.5208	+.2751	+9.0168	.9976
24	62 Piscium	6	+35	—54	6 3.2	— 0 24 5	+0.1916	.5211	+.2747	+9.0556	.9972
24	δ Piscium	5	+23	—68	6 14.7	— 0 12 53	+0.4324	.5210	+.2747	+9.0742	.9969
24	ε Piscium	4	+90	+20	13 9.1	+ 6 28 24	+1.1332	.5272	+.2717	+9.0935	.9966
25	π Piscium	5	+90	+14	5 8.1	— 2 4 4	+1.0215	.5401	+.2599	+9.2965	.9913
25	104 Piscium	6½	— 4	—77	6 5.2	— 1 8 50	—0.9064	.5371	+ 2590	+9.3703	.9877
26	26 Arietis	6½	—14	—71	4 35.1	— 3 26 19	—1.0438	.5572	+.2295	+9.5176	.9751
26	27 Arietis	6	+90	+27	4 44.1	— 3 17 37	+1.1231	.5639	+.2294	+9.4678	.9804
26	B A.C. 782	6½	+56	—26	5 51.0	— 2 13 8	+0.1998	.5619	+.2276	+9.4959	.9776
26	μ Arietis	5½	+37	—42	9 29.5	+ 1 17 16	—0.1349	.5650	+.2209	+9.5215	.9746
26	47 Arietis	6	+81	— 5	15 54.7	+ 7 27 54	+0.5524	.5750	+.2081	+9.5361	.9727
26	ε Arietis	4½	+43	—34	16 22.3	+ 7 54 25	—0.0225	.5728	+.2072	+9.5498	.9708
27	66 Arietis	6½	+90	+ 5	3 55.2	— 4 59 47	+0.6900	.5882	+.1805	+9.5795	.9662
27	7 Tauri	6	+14	—60	6 12.4	— 2 48 5	- 0.5594	.5847	+.1751	+9.6091	.9608
27	9 Tauri	6	+90	+15	7 12.3	— 1 50 41	+0.8477	.5921	+.1726	+9.5872	.9649
27	11 Tauri	6	—15	—65	8 37.0	— 0 29 24	—1.0156	0.5848	+.1686	+9.6238	9.9577

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1857.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ☌.	At Washington Mean Time of Conjunction.					
			Northern.	Southern.		H	Y	p'	q'	Log sin D	Log cos D
			°	°	h. m.	h. m. s.					
Dec. 27	*g* Pleiadum	5½	+60	—16	10 10.5	+ 1 0 18	+0.2587	0.5921	+.1644	+9.6067	9.9612
27	*b* Pleiadum	4½	+72	— 7	10 12.3	+ 1 2 3	+0.4372	.5935	+.1641	+9.6036	.9618
27	*m* Pleiadum	7	+30	—42	10 18.0	+ 1 7 27	—0.2654	.5902	+.1641	+9.6160	.9594
27	*s* Tauri	5	+51	—23	10 19.5	+ 1 8 52	+0.1065	.5916	+.1642	+9.6097	.9607
27	*c* Pleiadum	5	+59	—16	10 33.7	+ 1 22 30	+0.2419	.5928	+.1639	+9.6080	.9610
27	*k* Pleiadum	7½	+48	—25	10 35.3	+ 1 23 5	+0.0612	.5920	+.1635	+9.6112	.9603
27	*l* Pleiadum	7½	+50	—24	10 38.5	+ 1 27 10	+0.0964	.5922	+.1631	+9.6107	.9604
27	*d* Pleiadum	5	+90	+ 7	10 45.6	+ 1 33 58	+0.6876	.5953	+.1627	+9.6008	.9624
27	12 Pleiadum	7½	+54	—20	11 0.0	+ 1 47 44	+0.1596	.5927	+.1624	+9.6106	.9604
27	*p* Pleiadum	7½	+85	+ 1	11 8.7	+ 1 56 5	+0.5809	.5950	+.1621	+9.6038	.9618
27	η Tauri	3	+87	+ 2	11 11.7	+ 1 59 0	+0.6001	.5950	+.1618	+9.6036	.9618
27	*s* Pleiadum	7½	+90	+21	11 45.2	+ 2 31 4	+0.9294	.5968	+.1599	+9.5993	.9627
27	*f* Pleiadum	4½	+90	+11	11 49.9	+ 2 35 37	+0.7486	.5960	+.1597	+9.6027	.9620
27	*h* Pleiadum	5½	+90	+ 6	11 50.3	+ 2 36 1	+0.6670	.5956	+.1597	+9.6043	.9617
27	34 Pleiadum	7½	+90	+35	12 3.1	+ 2 48 16	+1.1187	.5976	+.1590	+9.5968	.9631
27	B.A.C. 1192	6½	+ 6	—65	12 14.1	+ 2 58 50	—0.6986	.5893	+.1584	+9.6284	.9567
27	40 Pleiadum	7½	+90	+22	12 14.8	+ 2 58 53	+0.9372	.5980	+.1583	+9.6013	.9623
27	*p* Tauri	6	+16	—54	19 52.5	+10 18 5	—0.5162	.5979	+.1364	+9.6436	.9532
27	φ Tauri	5	—11	—63	23 21.1	—10 22 11	—0.9458	.5980	+.1264	+9.6572	.9498
28	χ Tauri	5½	+90	+20	0 12.1	— 9 33 20	+0.8522	.6085	+.1234	+9.6307	.9562
28	B.A.C. 1648	6½	+58	— 7	21 0.1	+10 19 52	+0.2203	.6173	+.0519	+9.6689	.9467
28	β Tauri	2	+25	—37	22 50.6	—11 54 31	—0.3509	.6154	+.0461	+9.6784	.9440
29	B.A.C. 1709	6½	— 7	—61	0 0.9	—10 47 22	—0.8750	.6120	+.0412	+9.6866	.9415
29	B.A.C. 1746	6½	+90	+18	2 4.2	— 8 49 39	+0.6799	.6155	+.0339	+9.6796	.9436
29	B.A.C. 1772	6	— 3	—61	3 23.2	— 7 34 11	—0.8140	.6131	+.0289	+9.6874	.9413
29	136 Tauri	5	+90	+28	8 19.5	— 2 51 9	+0.8147	.6236	+.0115	+9.6655	.9476
29	B.A.C. 1882	6½	+16	—43	9 25.3	— 1 48 19	—0.4933	.6159	+.0075	+9.6844	.9422
29	κ Aurigæ	4	—31	—61	15 59.5	+ 4 28 8	—1.1456	.6114	—.0164	+9.6930	.9395
29	B.A.C. 2097	6½	+41	—20	21 16.8	+ 9 31 14	—0.0621	.6162	—.0364	+9.6760	.9447
29	49 Aurigæ	6½	+47	—15	22 59.2	+11 9 8	+0.0413	.6162	—.0432	+9.6735	.9454
30	53 Aurigæ	6½	—14	—61	0 5.2	—11 37 41	—0.9654	.6100	—.0465	+9.6870	.9414
30	54 Aurigæ	6	+28	—34	0 31.0	—11 23 9	—0.2961	.6135	—.0476	+9.6773	.9443
30	28 Geminor.	6	—24	—61	2 20.5	— 9 38 31	—1.0882	.6085	—.0537	+9.6871	.9413
30	47 Geminor.	6	+58	—10	11 54.8	— 0 29 33	+0.2278	.6104	—.0873	+9.6584	.9496
30	53 Geminor.	6	—13	—62	13 30.5	+ 1 1 58	—0.9581	.6025	—.0931	+9.6736	.9453
30	59 Geminor.	6½	—19	—62	16 40.5	+ 4 3 47	—1.0402	.6004	—.1029	+9.6703	.9463
30	ι Geminor.	4	—44	—62	17 6.4	+ 4 28 38	—1.2517	.5984	—.1051	+9.6727	.9456
30	ν Geminor.	5	— 2	—63	20 52.3	+ 8 4 49	—0.8090	.5982	—.1165	+9.6602	.9490
30	*c* Geminor.	6	+39	—30	23 56.2	+11 1 0	—0.1017	.5989	—.1269	+9.6437	.9532
31	κ Geminor.	3½	+90	+52	0 5.6	+11 9 58	+1.2520	.6058	—.1269	+9.6216	.9582
31	ω^1 Cancri	6	+10	—61	6 16.7	— 6 54 20	—0.6233	.5905	—.1438	+9.6384	.9545
31	ω^2 Cancri	6½	+24	—46	6 35.5	— 6 36 18	—0.3683	.5910	—.1457	+9.6336	.9555
31	υ^2 Cancri	6½	—29	—66	17 2.9	+ 3 25 43	—1.1806	.5771	—.1730	+9.6196	.9586
31	γ Cancri	4½	+68	—12	22 58.9	+ 9 7 51	+0.3883	0.5775	—.1877	+9.5731	9.9672

NOTE. — B. A. C., British Association Catalogue.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1857.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point	Vertex.	
			h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
Jan. 5	ζ Arietis	4½	4 56	9 53	236	281	5 38	10 35	168	220	0 42
6	36 Tauri	6½	22 59	3 53	280	223	23 57	4 51	130	72	0 58
6	χ Tauri	5½	8 57	13 50	316	14	9 44	14 37	55	111	0 46
7	B.A.C. 1746 ‡	6½	12 49	17 37	308	355	13 25	18 13	46	89	0 36
8	B.A.C. 2097	6½	9 10	13 55	329	31	9 34	14 19	9	71	0 25
8	49 Aurigæ	6½	11 32	16 16	348	46	Star 1′.9	north of	☾'s	limb.	
9	c Geminor.	6	14 21	19 1	326	17	14 35	19 16	0	49	0 14
10	λ Cancri	6	2 27	7 5	253	198	3 27	8 5	94	36	1 1
12	37 Leonis	6	9 14	13 44	211	188	10 32	15 2	76	87	1 18
14	β Virginis	3½	12 3	16 20	337	343	13 25	17 42	39	68	1 22
Feb. 2	30 Pleiadum	8½	1 26	4 34	336	282	2 25	5 33	81	41	0 59
2	34 Pleiadum	7½	1 22	4 29	287	233	2 36	5 44	128	90	1 14
2	38 Pleiadum	8	1 37	4 45	308	256	2 52	6 0	107	77	1 15
2	40 Pleiadum	7½	2 9	5 17	309	263	3 27	6 34	105	94	1 17
5	47 Geminor.	6	11 1	13 56	169	230	11 ,9	14 4	156	216	0 8
6	ω¹ Cancri	6	4 26	7 18	274	214	5 42	8 34	68	11	1 16
6	ω² Cancri	6½	5 15	8 6	208	151	6 5	8 57	131	78	0 50
10	σ Leonis	4	4 22	6 58	268	219	5 15	7 51	42	351	0 53
11	13 Virginis	6	15 14	17 45	243	284	16 26	18 56	46	94	1 11
16	B.A.C. 5314	6	12 17	14 28	195	155	13 6	15 17	110	77	0 49
16	B.A.C. 5347	5	15 19	17 30	209	200	16 32	18 43	104	111	1 13
26	B.A.C. 221	6	3 42	5 40	280	327	4 41	6 39	144	194	0 59
March 1	1 Pleiadum	8	9 45	11 5	9	62	Star 2′.8	north of	☾'s	limb.	
1	7 Pleiadum	8	9 54	11 15	9	61	Star 2′.2	north of	☾'s	limb.	
1	d Pleiadum	5	9 37	10 58	302	355	10 27	11 48	76	125	0 50
1	13 Pleiadum	8½	10 6	11 27	335	27	10 36	11 56	42	91	0 29
1	14 Pleiadum	9	9 53	11 14	277	330	10 46	12 7	100	148	0 53
1	16 Pleiadum	9½	9 57	11 18	288	340	10 49	12 10	89	137	0 52
1	17 Pleiadum	8	9 56	11 17	268	321	10 48	12 9	109	157	0 52
1	19 Pleiadum	8	9 59	11 20	248	300	10 45	12 5	129	178	0 45
1	22 Pleiadum	8	10 5	11 25	309	1	10 50	12 10	68	115	0 45
1	23 Pleiadum	8½	10 1	11 21	257	309	10 49	12 10	120	168	0 49
1	η Tauri	3	10 32	11 52	8	58	Star 3′.2	north of	☾'s	limb.	
1	25 Pleiadum	8½	10 8	11 28	238	290	10 48	12 8	138	187	0 40
1	26 Pleiadum	9	10 17	11 37	217	268	10 41	12 2	160	209	0 25
1	s Pleadium ‡	7½	10 35	11 55	285	335	11 25	12 45	91	136	0 50
1	f Pleiadum ‡	4½	10 53	12 13	333	21	11 22	12 42	43	88	0 29
1	h Pleiadum *	5½	11 9	12 29	8	54	Star 1′.9	north of	☾'s	limb.	
1	30 Pleiadum ‡	8½	10 41	12 2	290	339	11 30	12 51	86	130	0 49
1	34 Pleiadum ‡	7½	10 53	12 14	248	296	11 36	12 56	128	172	0 43
1	38 Pleiadum ‡	8	10 57	12 16	277	324	11 46	13 5	99	142	0 49
1	40 Pleiadum *	7½	11 18	12 39	295	340	12 4	13 24	81	122	0 46
10	β Virginis	3½	6 18	7 3	203	152	7 9	7 54	98	48	0 51
10	B.A.C. 4043	6½	13 42	13 26	285	300	13 27	14 11	353	20	0 45
11	B.A.C. 4294	6½	17 23	18 3	307	356	17 50	18 30	356	45	0 27
12	α Virginis	1	12 43	13 20	240	231	14 9	14 45	38	51	1 25
14	B.A.C. 4923	6	14 31	15 0	210	212	15 52	16 20	88	107	1 20
15	B.A C. 5197	6	13 22	13 46	265	238	14 40	15 5	36	47	1 18
29	χ Tauri	5½	9 16	8 47	185	242	Star 0′.4	south of	☾'s	limb.	
30	B.A.C. 1648	6½	6 0	5 27	253	292	7 16	6 43	115	174	1 16
30	B.A.C. 1746 ‡	6½	13 6	12 12	219	266	13 39	12 45	134	178	0 32
31	B.A.C. 2097	6½	9 1	8 24	249	310	10 11	9 34	88	149	1 10
31	49 Aurigæ	6½	11 18	10 41	261	320	12 16	11 38	74	130	0 58

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1857.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
April 1	*c* Geminor. ‡	6	14 54	14 12	276	323	15 38	14 56	52	95	0 44
5	*χ* Leonis	5	15 48	14 50	245	296	16 48	15 50	52	104	1 0
8	B A.C. 4394	5½	12 18	11 8	217	194	13 40	12 31	58	57	1 23
8	58 Virginis *	6	18 45	17 35	217	268	19 40	18 29	94	144	0 55
28	47 Geminor.	6	11 12	8 45	163	223	Star 2′.6	south of	☾'s	limb.	
May 4	13 Virginis	6	16 53	14 1	252	301	17 55	15 3	47	98	1 2
9	B.A.C. 5314	6	14 9	10 57	143	121	15 37	12 26	164	160	1 29
9	B.A.C. 5347	5	17 41	14 28	235	256	19 3	15 51	96	131	1 23
17	*χ* Aquarii	5½	18 25	14 40	254	206	19 11	15 27	166	121	0 46
19	B.A.C. 274	6½	19 39	15 47	330	278	20 30	16 38	95	45	0 51
June 2	*α* Virginis	1	13 25	8 39	228	229	14 50	10 4	49	72	1 25
4	B.A.C. 4923	6	14 44	9 50	205	204	15 59	11 5	90	106	1 16
5	B.A.C. 5197	6	13 39	8 41	256	231	15 4	10 6	47	40	1 24
5	A Scorpii ‡	5	19 18	14 19	270	310	20 31	15 33	71	119	1 14
5	B.A.C. 5255 ‡	6	19 40	14 42	256	298	20 52	15 53	87	136	1 12
5	3 Scorpii ‡	6	19 58	15 1	301	345	20 53	15 56	42	91	0 55
9	B.A.C. 6628 *	6	13 6	8 52	221	171	13 51	9 37	137	92	0 45
11	*φ* Capricor. †	6	16 5	10 43	323	274	16 58	11 37	68	24	0 54
14	20 Piscium	6	19 5	13 31	30	342	Star 0′.9	north of	☾'s	limb.	
25	34 Leonis	6	14 36	8 20	253	306	15 33	9 17	44	97	0 57
28	B.A.C. 4200	6½	15 54	9 26	180	224	16 36	10 8	110	157	0 42
28	B.A.C. 4225 ‡	6½	18 2	11 33	215	265	18 55	12 26	91	141	0 53
July 8	*χ* Capricor.	6	22 8	14 59	273	288	23 14	16 6	152	180	1 7
10	70 Aquarii	6	20 51	13 35	289	263	22 7	14 50	147	139	1 15
August 4	B.A.C. 7197	6	22 18	13 23	285	306	23 29	14 34	136	169	1 12
6	50 Aquarii †	6	16 44	7 42	271	220	17 43	8 41	136	90	0 59
8	B.A C. 8365 †	6½	17 51	8 40	260	209	18 34	9 24	159	108	0 44
12	*o* Pleiadum	5	22 8	12 41	24	328	Star 0′.8	north of	☾'s	limb.	
12	*d* Pleiadum	5	21 52	12 26	330	275	22 37	13 10	78	21	0 44
12	11 Pleiadum	8½	22 26	12 59	20	324	22 30	13 3	29	333	0 4
12	13 Pleiadum	8½	22 8	12 42	316	261	22 57	13 30	85	28	0 49
12	14 Pleiadum	9	21 59	12 32	276	222	22 52	13 25	133	76	0 53
12	15 Pleiadum	8½	22 29	13 2	355	299	22 57	13 30	54	357	0 28
12	16 Pleiadum	9½	22 2	12 35	284	229	22 57	13 31	125	68	0 55
12	17 Pleiadum	8	22 2	12 35	265	210	22 51	13 24	145	89	0 49
12	18 Pleiadum	8	22 31	13 4	357	301	22 57	13 30	52	355	0 26
12	*p* Pleiadum	7½	22 27	13 0	348	292	23 1	13 34	62	4	0 34
12	19 Pleiadum	8	22 7	12 41	240	185	22 40	13 13	169	113	0 32
12	22 Pleiadum	8	22 9	12 42	301	246	23 5	13 38	108	51	0 56
12	23 Pleiadum	8½	22 8	12 41	249	194	22 47	13 21	160	103	0 40
12	*η* Tauri	3	22 9	12 42	340	285	22 49	13 22	70	13	0 40
12	25 Pleiadum	8½	22 28	13 1	205	148	Star 0′.0	south of	☾'s	limb.	
12	*s* Pleadium	7½	22 45	13 18	257	200	23 31	14 5	154	97	0 47
12	*f* Pleiadum	4½	22 52	13 25	293	236	23 52	14 25	119	60	1 0
12	*h* Pleiadum	5½	22 57	13 30	308	251	23 56	14 29	103	45	0 59
12	30 Pleiadum	8½	22 52	13 25	257	200	23 39	14 12	154	96	0 47
12	31 Pleiadum	8	23 41	14 14	26	328	Star 0′.8	north of	☾'s	limb.	
12	32 Pleiadum	8	23 35	14 8	12	314	23 50	14 23	40	341	0 15
12	33 Pleiadum	8	23 11	13 44	326	268	0 4	14 37	86	28	0 53
12	35 Pleiadum	9	23 17	13 50	318	260	0 14	14 47	95	36	0 58
12	36 Pleiadum	9	23 17	13 50	309	251	0 18	14 51	103	45	1 1
12	37 Pleiadum	8	23 31	14 4	337	279	0 18	14 51	75	17	0 47
12	38 Pleiadum	8	23 31	14 4	206	148	Star 0′.4	south of	☾'s	limb.	

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1857.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
Aug. 12	39 Pleiadum	8	0 4	14 37	8	309	0 25	14 58	45	347	0 21
12	40 Pleiadum	7½	23 53	14 26	214	156	0 2	14 35	198	140	0 9
22	*f* Virginis	6	17 10	7 6	287	336	17 54	7 50	15	66	0 44
30	B A.C. 6628	6	19 56	9 19	281	289	21 21	10 44	117	142	1 25
Sept. 1	χ Capricor.	6	16 14	5 30	310	262	17 17	6 33	82	42	1 3
1	φ Capricor.	6	20 28	9 43	285	276	21 47	11 2	139	148	1 19
2	45 Aquarii *	6	3 31	16 47	302	352	4 25	17 41	118	169	0 54
3	h^1 Aquarii	6	0 59	14 6	321	350	2 7	15 14	117	156	1 8
3	h^2 Aquarii	7	0 58	14 5	305	334	2 7	15 14	132	171	1 9
3	h^3 Aquarii	7	1 19	14 26	244	276	1 49	14 55	192	229	0 29
3	h^4 Aquarii	7½	2 15	15 22	234	273	2 34	15 41	199	241	0 19
4	20 Piscium	6	19 13	8 16	264	216	20 3	9 6	163	119	0 51
6	π Piscium	5	22 59	11 54	312	268	0 9	13 4	125	95	1 10
7	27 Arietis	6	22 4	10 55	271	216	22 57	11 48	155	92	0 53
8	ε Arietis	4½	21 59	10 46	315	260	22 52	11 39	97	41	0 53
11	49 Aurigæ *	6½	22 18	10 54	4	322	Star 0′.4	north of	☾'s	limb.	
12	*c* Geminor.	6	0 43	13 14	271	221	1 38	14 9	84	30	0 55
15	γ^1 Sagittarii	4	18 55	6 35	268	280	20 24	8 4	105	135	1 30
27	ω Sagittarii	5½	20 31	8 4	307	317	21 53	9 26	100	126	1 22
27	A Sagittarii	5	19 18	7 50	259	290	20 15	8 48	152	192	0 58
28	B.A.C. 7197	6	19 50	7 19	350	338	20 41	8 10	62	62	0 52
30	B.A.C. 7835	6½	17 43	5 4	268	221	18 43	6 4	145	104	1 0
Oct. 2	B.A.C. 57	6½	21 35	8 48	308	270	22 46	9 59	130	106	1 11
7	B.A.C. 1648	6½	1 43	12 36	268	207	2 50	13 43	122	61	1 7
8	B.A.C. 2097	6½	3 44	14 32	257	195	4 59	15 48	108	56	1 15
8	49 Aurigæ	6½	6 41	17 29	214	229	7 36	18 24	131	179	0 55
12	34 Leonis *	6	2 54	13 27	175	126	3 6	13 39	149	100	0 12
28	h^1 Aquarii	6	0 59	10 29	304	333	2 8	11 39	134	174	1 9
28	h^2 Aquarii	7	1 1	10 31	288	317	2 6	11 36	149	188	1 5
29	20 Piscium	6	19 39	5 6	242	196	20 10	5 37	187	144	0 31
31	π Piscium	5	22 21	7 40	328	280	23 22	8 40	105	65	1 1
Nov. 1	27 Arietis	6	20 27	5 42	306	254	21 18	6 33	109	55	0 52
2	9 Tauri	6	22 11	7 22	293	238	23 6	8 17	117	60	0 55
2	*g* Pleiadum	5½	2 7	11 18	334	288	3 5	12 15	78	57	0 58
2	*b* Pleiadum	4½	1 52	11 2	298	248	3 5	12 15	114	93	1 13
2	ε Tauri	5	2 57	12 7	26	359	Star 0′.8	north of	☾'s	limb.	
2	*c* Pleiadum	5	2 36	11 47	327	290	3 40	12 50	83	85	1 4
2	*l* Pleiadum	7½	3 14	12 25	12	355	3 31	12 42	38	33	0 17
2	*d* Pleiadum	5	2 57	12 7	207	181	3 2	12 12	200	176	0 5
2	12 Pleiadum	7½	3 20	12 30	335	321	4 17	13 28	73	99	0 58
2	*p* Pleiadum	7½	3 14	12 24	242	224	4 2	13 12	163	180	0 49
2	η Tauri	3	3 21	12 32	234	221	4 1	13 12	171	187	0 40
5	47 Geminor.	6	5 15	14 13	175	120	Star 2′.6	south of	☾'s	limb.	
10	89 Leonis	6	5 22	14 0	239	188	6 23	15 1	65	14	1 1
29	66 Arietis *	6½	10 43	18 6	269	315	11 29	18 52	111	154	0 46
Dec. 1	B.A.C. 1648	6½	1 7	8 23	336	37	1 46	9 2	54	115	0 39
2	49 Aurigæ	6½	3 3	10 15	308	247	4 1	11 13	59	358	0 58
3	*c* Geminor.	6	4 15	11 23	302	242	5 11	12 19	42	344	0 56
4	γ Cancri	4½	4 3	11 7	167	111	Star 3′.4	south of	☾'s	limb.	
7	τ Leonis	5	13 6	19 57	163	193	13 39	20 30	115	152	0 32
10	B.A.C. 4531	6	8 35	15 14	179	131	9 9	15 48	114	68	0 34
22	φ Aquarii	5	0 46	6 41	285	310	1 54	7 48	154	191	1 7
22	96 Aquarii ‡	5½	4 13	10 7	280	328	5 7	11 1	142	193	0 54

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1857.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h. m.	h. m.	°	°	h. m.	h. m.	°	°	h. m.
Dec. 27	*g* Pleiadum	5½	5 27	11 1	276	308	6 42	12 16	121	174	1 15
27	*b* Pleiadum	4½	4 38	10 12	232	268	5 21	10 55	164	214	0 43
27	ε Tauri	5	4 47	10 21	305	346	6 0	11 34	90	146	1 13
27	*c* Pleiadum	5	5 1	10 25	276	321	6 15	11 49	117	163	1 14
27	*k* Pleiadum	7½	5 13	10 47	312	0	6 21	11 55	80	147	1 8
27	*l* Pleiadum	7½	5 15	10 49	304	353	6 26	12 0	87	144	1 11
27	12 Pleiadum	7½	5 41	11 15	290	343	6 54	12 28	98	157	1 13
30	47 Geminor.	6	5 10	10 32	252	202	6 28	11 50	89	85	1 18

NOTES.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct vision*, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the West. For *inverted image*, add 180° to the angles given.

WASHINGTON MEAN TIME.

JANUARY.

			d.	h.	m.	s.
III.	Transit	Ingress	0	19	0	
III.	Transit	Egress	0	22	6	
III.	Shadow	Ingress	1	0	32	
III.	Shadow	Egress	1	3	21	
I.	Occult.	Disapp.	1	5	5	
I.	Eclipse	Reapp. W.	1	8	39	11.8
I.	Transit	Ingress	2	2	16	
I.	Shadow	Ingress	2	3	38	
I.	Transit	Egress	2	4	32	
I.	Shadow	Egress W.	2	5	52	
II.	Transit	Ingress W.	2	6	15	
II.	Shadow	Ingress W.	2	8	54	
II.	Transit	Egress W.	2	9	3	
II.	Shadow	Egress	2	11	38	
I.	Occult.	Disapp.	2	23	36	
I.	Eclipse	Reapp.	3	3	8	14.0
I.	Transit	Ingress	3	20	46	
I.	Shadow	Ingress	3	22	6	
I.	Transit	Egress	3	23	2	
I.	Shadow	Egress	4	0	19	
II.	Occult.	Disapp.	4	0	32	
II.	Eclipse	Reapp. W.	4	5	51	27.5
III.	Occult.	Disapp. W.	4	8	59	
III.	Occult.	Reapp.	4	12	5	
III.	Eclipse	Disapp.	4	14	34	37.9
III.	Eclipse	Reapp.	4	17	9	9.1
I.	Occult.	Disapp.	4	18	5	
I.	Eclipse	Reapp.	4	21	37	8.7
I.	Transit	Ingress	5	15	15	
I.	Shadow	Ingress	5	16	34	
I.	Transit	Egress	5	17	31	
I.	Shadow	Egress	5	18	48	
II.	Transit	Ingress	5	19	36	
II.	Shadow	Ingress	5	22	14	
II.	Transit	Egress	5	22	24	
II.	Shadow	Egress	6	0	57	
IV.	Occult.	Disapp. W.	6	7	57	
IV.	Occult.	Reapp. W.	6	10	6	
I.	Occult.	Disapp.	6	12	35	
I.	Eclipse	Reapp.	6	16	6	9.2
I.	Transit	Ingress W.	7	9	44	
I.	Shadow	Ingress	7	11	3	
I.	Transit	Egress	7	12	0	
I.	Shadow	Egress	7	13	17	
II.	Occult.	Disapp.	7	13	52	
II.	Eclipse	Reapp.	7	19	9	39.9
III.	Transit	Ingress	7	23	10	
III.	Transit	Egress	8	2	17	
III.	Shadow	Ingress	8	4	35	
I.	Occult.	Disapp. W.	8	7	4	
III.	Shadow	Egress W.	8	7	22	
I.	Eclipse	Reapp.	8	10	35	5.1
I.	Transit	Ingress	9	4	14	
I.	Shadow	Ingress W.	9	5	32	
I.	Transit	Egress W.	9	6	30	
I.	Shadow	Egress W.	9	7	46	
II.	Transit	Ingress W.	9	8	57	
II.	Shadow	Ingress	9	11	33	
II.	Transit	Egress	9	11	45	
II.	Shadow	Egress	9	14	16	
I.	Occult.	Disapp.	10	1	34	
I.	Eclipse	Reapp.	10	5	4	6.6
I.	Transit	Ingress	10	22	43	
I.	Shadow	Ingress	11	0	1	
I.	Transit	Egress	11	0	59	
I.	Shadow	Egress	11	2	15	
II.	Occult.	Disapp.	11	3	13	
II.	Eclipse	Reapp. W.	11	8	27	55.6
III.	Occult.	Disapp.	11	13	11	
III.	Occult.	Reapp.	11	16	17	
III.	Eclipse	Disapp.	11	18	37	34.2
I.	Occult.	Disapp.	11	20	3	
III.	Eclipse	Reapp.	11	21	10	57.8
I.	Eclipse	Reapp.	11	23	33	0.6
I.	Transit	Ingress	12	17	13	
I.	Shadow	Ingress	12	18	30	
I.	Transit	Egress	12	19	29	
I.	Shadow	Egress	12	20	44	
II.	Transit	Ingress	12	22	19	
II.	Shadow	Ingress	13	0	53	
II.	Transit	Egress	13	1	7	
II.	Shadow	Egress	13	3	36	
I.	Occult.	Disapp.	13	14	33	
I.	Eclipse	Reapp.	13	18	2	0.2
I.	Transit	Ingress	14	11	43	
I.	Shadow	Ingress	14	12	59	
I.	Transit	Egress	14	13	59	
I.	Shadow	Egress	14	15	13	
II.	Occult.	Disapp.	14	16	34	
IV.	Transit	Ingress	14	19	21	
IV.	Transit	Egress	14	21	24	
II.	Eclipse	Reapp.	14	21	46	10.0
III.	Transit	Ingress	15	3	24	
III.	Transit	Egress W.	15	6	29	
III.	Shadow	Ingress W.	15	8	36	
I.	Occult.	Disapp. W.	15	9	3	
III.	Shadow	Egress	15	11	23	
I.	Eclipse	Reapp.	15	12	30	55.3

WASHINGTON MEAN TIME.

JANUARY.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Ingress W.	16	6	13		I.	Shadow	Egress	23	11	38	
I.	Shadow	Ingress W.	16	7	27		II.	Transit	Ingress	23	14	26	
I.	Transit	Egress W.	16	8	28		II.	Shadow	Ingress	23	16	50	
I.	Shadow	Egress W.	16	9	42		II.	Transit	Egress	23	17	14	
II.	Transit	Ingress	16	11	41		II.	Shadow	Egress	23	19	32	
II.	Shadow	Ingress	16	14	12		I.	Occult.	Disapp. W.	24	5	33	
II.	Transit	Egress	16	14	29		I.	Eclipse	Reapp. W.	24	8	55	40.6
II.	Shadow	Egress	16	16	55		I.	Transit	Ingress	25	2	42	
I.	Occult.	Disapp.	17	3	33		I.	Shadow	Ingress	25	3	52	
I.	Eclipse	Reapp. W.	17	6	59	55.7	I.	Transit	Egress	25	4	58	
I.	Transit	Ingress	18	0	43		I.	Shadow	Egress W.	25	6	7	
I.	Shadow	Ingress	18	1	56		II.	Occult.	Disapp. W.	25	8	40	
I.	Transit	Egress	18	2	58		II.	Eclipse	Reapp.	25	13	41	11.2
I.	Shadow	Egress	18	4	11		III.	Occult.	Disapp.	25	21	47	
II.	Occult.	Disapp. W.	18	5	55		I.	Occult.	Disapp.	26	0	3	
II.	Eclipse	Reapp.	18	11	4	30.2	III.	Occult.	Reapp.	26	0	52	
III.	Occult.	Disapp.	18	17	28		III.	Eclipse	Disapp.	26	2	43	58.9
III.	Occult.	Reapp.	18	20	33		I.	Eclipse	Reapp.	26	3	24	32.6
I.	Occult.	Disapp.	18	22	3		III.	Eclipse	Reapp.	26	5	15	8.7
III.	Eclipse	Disapp.	18	22	41	6.1	I.	Transit	Ingress	26	21	12	
III.	Eclipse	Reapp.	19	1	13	22.7	I.	Shadow	Ingress	26	22	21	
I.	Eclipse	Reapp.	19	1	28	48.8	I.	Transit	Egress	26	23	28	
I.	Transit	Ingress	19	19	12		I.	Shadow	Egress	27	0	35	
I.	Shadow	Ingress	19	20	25		II.	Transit	Ingress	27	3	50	
I.	Transit	Egress	19	21	28		II.	Shadow	Ingress W.	27	6	9	
I.	Shadow	Egress	19	22	40		II.	Transit	Egress W.	27	6	38	
II.	Transit	Ingress	20	1	4		II.	Shadow	Egress W.	27	8	52	
II.	Shadow	Ingress	20	3	31		I.	Occult.	Disapp.	27	18	33	
II.	Transit	Egress	20	3	52		I.	Eclipse	Reapp.	27	21	53	29.8
II.	Shadow	Egress W.	20	6	14		I.	Transit	Ingress	28	15	42	
I.	Occult.	Disapp.	20	16	33		I.	Shadow	Ingress	28	16	50	
I.	Eclipse	Reapp.	20	19	57	47.2	I.	Transit	Egress	28	17	58	
I.	Transit	Ingress	21	13	42		I.	Shadow	Egress	28	19	4	
I.	Shadow	Ingress	21	14	54		II.	Occult.	Disapp.	28	22	3	
I.	Transit	Egress	21	15	58		II.	Eclipse	Reapp.	29	2	59	29.4
I.	Shadow	Egress	21	17	9		III.	Transit	Ingress	29	12	1	
II.	Occult.	Disapp.	21	19	17		I.	Occult.	Disapp.	29	13	3	
II.	Eclipse	Reapp.	22	0	22	46.6	III.	Transit	Egress	29	15	5	
III.	Transit	Ingress W.	22	7	41		I.	Eclipse	Reapp.	29	16	22	22.6
III.	Transit	Egress	22	10	45		III.	Shadow	Ingress	29	16	42	
I.	Occult.	Disapp.	22	11	3		III.	Shadow	Egress	29	19	26	
III.	Shadow	Ingress	22	12	39		I.	Transit	Ingress	30	10	12	
I.	Eclipse	Reapp.	22	14	26	41.2	I.	Shadow	Ingress	30	11	19	
III.	Shadow	Egress	22	15	25		I.	Transit	Egress	30	12	28	
IV.	Occult.	Disapp.	23	3	31		I.	Shadow	Egress	30	13	33	
IV.	Occult.	Reapp. W.	23	5	31		II.	Transit	Ingress	30	17	13	
I.	Transit	Ingress W.	23	8	12		II.	Shadow	Ingress	30	19	28	
I.	Shadow	Ingress W.	23	9	23		II.	Transit	Egress	30	20	1	
I.	Transit	Egress	23	10	28		II.	Shadow	Egress	30	22	11	

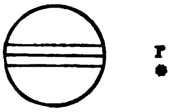
WASHINGTON MEAN TIME.

JANUARY.

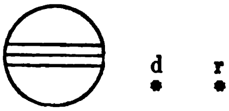
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Occult.	Disapp. W.	31	7	33		IV.	Transit	Ingress	31	15	13	
I.	Eclipse	Reapp.	31	10	51	20.6	IV.	Transit	Egress	31	17	5	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

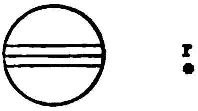
I.



III.



II.



IV. *Not Eclipsed.*

FEBRUARY.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Ingress	1	4	42		II.	Occult.	Disapp.	5	0	50	
I.	Shadow	Ingress W.	1	5	48		II.	Eclipse	Reapp. W.	5	5	36	18.1
I.	Transit	Egress W.	1	6	58		I.	Occult.	Disapp.	5	15	3	
I.	Shadow	Egress W.	1	8	2		III.	Transit	Ingress	5	16	23	
II.	Occult.	Disapp.	1	11	26		I.	Eclipse	Reapp.	5	18	17	59.0
II.	Eclipse	Reapp.	1	16	17	58.3	III.	Transit	Egress	5	19	26	
I.	Occult.	Disapp.	2	2	3		III.	Shadow	Ingress	5	20	44	
III.	Occult.	Disapp.	2	2	9		III.	Shadow	Egress	5	23	27	
III.	Occult.	Reapp.	2	5	13		I.	Transit	Ingress	6	12	13	
I.	Eclipse	Reapp.	2	5	20	11.6	I.	Shadow	Ingress	6	13	14	
III.	Eclipse	Disapp. W.	2	6	46	49.7	I.	Transit	Egress	6	14	28	
III.	Eclipse	Reapp.	2	9	16	53.1	I.	Shadow	Egress	6	15	28	
I.	Transit	Ingress	2	23	12		II.	Transit	Ingress	6	20	1	
I.	Shadow	Ingress	3	0	17		II.	Shadow	Ingress	6	22	6	
I.	Transit	Egress	3	1	28		II.	Transit	Egress	6	22	49	
I.	Shadow	Egress	3	2	31		II.	Shadow	Egress	7	0	48	
II.	Transit	Ingress W.	3	6	38		I.	Occult.	Disapp.	7	9	33	
II.	Shadow	Ingress W.	3	8	48		I.	Eclipse	Reapp.	7	12	46	55.7
II.	Transit	Egress	3	9	25		I.	Transit	Ingress W.	8	6	43	
II.	Shadow	Egress	3	11	30		I.	Shadow	Ingress W.	8	7	43	
I.	Occult.	Disapp.	3	20	33		I.	Transit	Egress	8	8	58	
I.	Eclipse	Reapp.	3	23	49	7.5	I.	Shadow	Egress	8	9	57	
I.	Transit	Ingress	4	17	42		II.	Occult.	Disapp.	8	14	13	
I.	Shadow	Ingress	4	18	46		II.	Eclipse	Reapp.	8	18	54	51.8
I.	Transit	Egress	4	19	58		IV.	Occult.	Disapp.	8	23	47	
I.	Shadow	Egress	4	21	0		IV.	Occult.	Reapp.	9	1	28	

WASHINGTON MEAN TIME.

FEBRUARY.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Occult.	Disapp.	9	4	4		III.	Eclipse	Reapp.	16	17	19	19.6
III.	Occult.	Disapp. W.	9	6	33		I.	Transit	Ingress	17	3	14	
I.	Eclipse	Reapp. W.	9	7	15	45.4	I.	Shadow	Ingress	17	4	7	
III.	Occult.	Reapp.	9	9	35		I.	Transit	Egress	17	5	29	
III.	Eclipse	Disapp.	9	10	49	12.0	I.	Shadow	Egress W.	17	6	21	
III.	Eclipse	Reapp.	9	13	18	9.2	IV.	Transit	Ingress	17	11	44	
I.	Transit	Ingress	10	1	13		II.	Transit	Ingress	17	12	15	
I.	Shadow	Ingress	10	2	12		IV.	Transit	Egress	17	13	10	
I.	Transit	Egress	10	3	28		II.	Shadow	Ingress	17	14	3	
I.	Shadow	Egress	10	4	26		II.	Transit	Egress	17	15	2	
II.	Transit	Ingress	10	9	26		II.	Shadow	Egress	17	16	45	
II.	Shadow	Ingress	10	11	25		I.	Occult.	Disapp.	18	0	35	
II.	Transit	Egress	10	12	13		I.	Eclipse	Reapp.	18	3	40	6.1
II.	Shadow	Egress	10	14	7		I.	Transit	Ingress	18	21	45	
I.	Occult.	Disapp.	10	22	34		I.	Shadow	Ingress	18	22	36	
I.	Eclipse	Reapp.	11	1	44	39.7	I.	Transit	Egress	19	0	0	
I.	Transit	Ingress	11	19	43		I.	Shadow	Egress	19	0	50	
I.	Shadow	Ingress	11	20	41		II.	Occult.	Disapp. W.	19	6	26	
I	Transit	Egress	11	21	59		II.	Eclipse	Reapp.	19	10	50	13.6
I	Shadow	Egress	11	22	55		I.	Occult.	Disapp.	19	19	6	
II.	Occult.	Disapp.	12	3	37		I.	Eclipse	Reapp.	19	22	8	54.7
II.	Eclipse	Reapp. W.	12	8	13	12.8	III.	Transit	Ingress	20	1	16	
I.	Occult.	Disapp.	12	17	4		III.	Transit	Egress	20	4	17	
I.	Eclipse	Reapp.	12	20	13	28.7	III.	Shadow	Ingress	20	4	50	
III.	Transit	Ingress	12	20	49		III.	Shadow	Egress W.	20	7	31	
III.	Transit	Egress	12	23	52		I.	Transit	Ingress	20	16	15	
III.	Shadow	Ingress	13	0	47		I.	Shadow	Ingress	20	17	5	
III.	Shadow	Egress	13	3	29		I.	Transit	Egress	20	18	30	
I.	Transit	Ingress	13	14	14		I.	Shadow	Egress	20	19	19	
I.	Shadow	Ingress	13	15	10		II.	Transit	Ingress	21	1	40	
I.	Transit	Egress	13	16	29		II.	Shadow	Ingress	21	3	22	
I.	Shadow	Egress	13	17	24		II.	Transit	Egress	21	4	27	
II.	Transit	Ingress	13	22	50		II.	Shadow	Egress W.	21	6	3	
II.	Shadow	Ingress	14	0	44		I.	Occult.	Disapp.	21	13	36	
II.	Transit	Egress	14	1	37		I.	Eclipse	Reapp.	21	16	37	48.4
II.	Shadow	Egress	14	3	26		I.	Transit	Ingress	22	10	45	
I.	Occult.	Disapp.	14	11	35		I.	Shadow	Ingress	22	11	34	
I.	Eclipse	Reapp.	14	14	42	25.0	I.	Transit	Egress	22	13	0	
I.	Transit	Ingress	15	8	44		I.	Shadow	Egress	22	13	48	
I.	Shadow	Ingress	15	9	39		II.	Occult.	Disapp.	22	19	51	
I.	Transit	Egress	15	10	59		II.	Eclipse	Reapp.	23	0	8	57.0
I.	Shadow	Egress	15	11	53		I.	Occult.	Disapp.	23	8	6	
II.	Occult.	Disapp.	15	17	2		I.	Eclipse	Reapp.	23	11	6	35.5
II.	Eclipse	Reapp.	15	21	31	51.4	III.	Occult.	Disapp.	23	15	27	
I.	Occult.	Disapp.	16	6	5		III.	Occult.	Reapp.	23	18	27	
I.	Eclipse	Reapp.	16	9	11	13.4	III.	Eclipse	Disapp.	23	18	54	1.1
III.	Occult.	Disapp.	16	10	59		III.	Eclipse	Reapp.	23	21	20	46.9
III.	Occult.	Reapp.	16	14	0		I.	Transit	Ingress	24	5	15	
III.	Eclipse	Disapp.	16	14	51	28.2	I.	Shadow	Ingress W.	24	6	3	

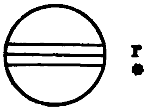
WASHINGTON MEAN TIME.

FEBRUARY.

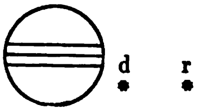
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Egress W.	24	7	31		I.	Occult.	Disapp.	26	21	7	
I.	Shadow	Egress	24	8	17		I.	Eclipse	Reapp.	27	0	4	13.4
II.	Transit	Ingress	24	15	5		III.	Transit	Ingress	27	5	45	
II.	Shadow	Ingress	24	16	41		III.	Transit	Egress	27	8	45	
II.	Transit	Egress	24	17	52		III.	Shadow	Ingress	27	8	52	
II.	Shadow	Egress	24	19	22		III.	Shadow	Egress	27	11	32	
I.	Occult.	Disapp.	25	2	37		I.	Transit	Ingress	27	18	16	
I.	Eclipse	Reapp.	25	5	35	26.2	I.	Shadow	Ingress	27	19	0	
IV.	Occult.	Disapp.	25	20	38		I.	Transit	Egress	27	20	31	
IV.	Occult.	Reapp.	25	21	44		I.	Shadow	Egress	27	21	14	
I.	Transit	Ingress	25	23	46		II.	Transit	Ingress	28	4	30	
I.	Shadow	Ingress	26	0	32		II.	Shadow	Ingress	28	5	59	
I.	Transit	Egress	26	2	1		II.	Transit	Egress W.	28	7	16	
I.	Shadow	Egress	26	2	46		II.	Shadow	Egress	28	8	40	
II.	Occult.	Disapp.	26	9	16		I.	Occult.	Disapp.	28	15	37	
II.	Eclipse	Reapp.	26	13	27	20.3	I.	Eclipse	Reapp.	28	18	33	5.2

Phases of the Eclipses of the Satellites for an Inverting Telescope.

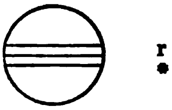
I.



III.



II.



IV. *Not Eclipsed.*

MARCH.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Ingress	1	12	46		I.	Transit	Ingress W.	3	7	17	
I.	Shadow	Ingress	1	13	29		I.	Shadow	Ingress	3	7	58	
I.	Transit	Egress	1	15	2		I.	Transit	Egress	3	9	32	
I.	Shadow	Egress	1	15	43		I.	Shadow	Egress	3	10	12	
II.	Occult.	Disapp.	1	22	42		II.	Transit	Ingress	3	17	56	
II.	Eclipse	Reapp.	2	2	46	8.4	II.	Shadow	Ingress	3	19	18	
I.	Occult.	Disapp.	2	10	8		II.	Transit	Egress	3	20	42	
I.	Eclipse	Reapp.	2	13	1	50.7	II.	Shadow	Egress	3	21	59	
III.	Occult.	Disapp.	2	19	56		I.	Occult.	Disapp.	4	4	38	
III.	Occult.	Reapp.	2	22	55		I.	Eclipse	Reapp. W.	4	7	30	39.9
III.	Eclipse	Disapp.	2	22	56	26.6	I.	Transit	Ingress	5	1	47	
III.	Eclipse	Reapp.	3	1	22	7.0	I.	Shadow	Ingress	5	2	27	

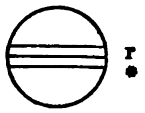
WASHINGTON MEAN TIME.

MARCH.

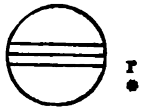
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Egress	5	4	2		I.	Transit	Egress	8	17	3	
I.	Shadow	Egress	5	4	41		I.	Shadow	Egress	8	17	39	
II.	Occult.	Disapp.	5	12	7		II.	Occult.	Disapp.	9	1	33	
II.	Eclipse	Reapp.	5	16	4	32.0	II.	Eclipse	Reapp.	9	5	23	25.0
I.	Occult.	Disapp.	5	23	8		I.	Occult.	Disapp.	9	12	9	
I.	Eclipse	Reapp.	6	1	59	25.3	I.	Eclipse	Reapp.	9	14	56	59.8
III.	Transit	Ingress	6	10	15		III.	Occult.	Disapp.	10	0	28	
III.	Shadow	Ingress	6	12	54		III.	Eclipse	Reapp.	10	5	23	57.5
III.	Transit	Egress	6	13	12		I.	Transit	Ingress	10	9	18	
III.	Shadow	Egress	6	15	33		I.	Shadow	Ingress	10	9	54	
I.	Transit	Ingress	6	20	17		I.	Transit	Egress	10	11	33	
I.	Shadow	Ingress	6	20	56		I.	Shadow	Egress	10	12	8	
I.	Transit	Egress	6	22	33		II.	Transit	Ingress	10	20	47	
I.	Shadow	Egress	6	23	10		II.	Shadow	Ingress	10	21	55	
II.	Transit	Ingress W.	7	7	22		II.	Transit	Egress	10	23	32	
II.	Shadow	Ingress	7	8	36		II.	Shadow	Egress	11	0	35	
II.	Transit	Egress	7	10	8		I.	Occult.	Disapp. W.	11	6	42	
II.	Shadow	Egress	7	11	17		I.	Eclipse	Reapp.	11	9	25	47.2
I.	Occult.	Disapp.	7	17	39		I.	Transit	Ingress	12	3	49	
I.	Eclipse	Reapp.	7	20	28	15.6	I.	Shadow	Ingress	12	4	23	
I.	Transit	Ingress	8	14	48		I.	Transit	Egress	12	6	4	
I.	Shadow	Ingress	8	15	25		I.	Shadow	Egress W.	12	6	37	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

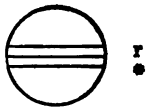
I.



III.



II.



IV. *Not Eclipsed.*

The Satellites are invisible from March 12th to May 12th, Jupiter being too near the Sun.

MAY.

			d.	h.	m.	s.				d.	h.	m.	s.
II.	Eclipse	Disapp.	12	2	27	47.4	II.	Occult.	Reapp.	12	6	9	
I.	Eclipse	Disapp.	12	6	0	25.7	I.	Occult.	Reapp.	12	8	43	

WASHINGTON MEAN TIME.

MAY.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Shadow	Ingress	13	3	9		II.	Shadow	Ingress	20	23	53	
I.	Transit	Ingress	13	3	43		III.	Occult.	Reapp.	21	0	21	
I.	Shadow	Egress	13	5	22		II.	Transit	Ingress	21	1	15	
I.	Transit	Egress	13	5	56		I.	Eclipse	Disapp.	21	2	23	7.7
III.	Eclipse	Disapp.	13	15	15	17.1	II.	Shadow	Egress	21	2	32	
III.	Occult.	Reapp.	13	19	55		II.	Transit	Egress	21	3	54	
II.	Shadow	Ingress	13	21	19		I.	Occult.	Reapp.	21	5	14	
II.	Transit	Ingress	13	22	25		I.	Shadow	Ingress	21	23	33	
II.	Shadow	Egress	13	23	57		I.	Transit	Ingress	22	0	14	
I.	Eclipse	Disapp.	14	0	28	58.6	I.	Shadow	Egress	22	1	46	
II.	Transit	Egress	14	1	6		I.	Transit	Egress	22	2	27	
I.	Occult.	Reapp.	14	3	13		II.	Eclipse	Disapp.	22	18	24	6.9
I.	Shadow	Ingress	14	21	37		I.	Eclipse	Disapp.	22	20	51	38.1
I.	Transit	Ingress	14	22	13		II.	Occult.	Reapp.	22	22	26	
I.	Shadow	Egress	14	23	50		I.	Occult.	Reapp.	22	23	44	
I.	Transit	Egress	15	0	26		I.	Shadow	Ingress	23	18	2	
II.	Eclipse	Disapp.	15	15	46	13.3	I.	Transit	Ingress	23	18	44	
I.	Eclipse	Disapp.	15	18	57	30.4	I.	Shadow	Egress	23	20	15	
II.	Occult.	Reapp.	15	19	34		I.	Transit	Egress	23	20	57	
I.	Occult.	Reapp.	15	21	43		III.	Shadow	Ingress	24	9	15	
I.	Shadow	Ingress	16	16	7		III.	Shadow	Egress	24	11	43	
I.	Transit	Ingress	16	16	44		III.	Transit	Ingress	24	12	9	
I.	Shadow	Egress	16	18	20		II.	Shadow	Ingress	24	13	11	
I.	Transit	Egress	16	18	57		II.	Transit	Ingress	24	14	40	
III.	Shadow	Ingress	17	5	14		III.	Transit	Egress	24	14	40	
III.	Transit	Ingress	17	7	39		I.	Eclipse	Disapp.	24	15	20	10.7
III.	Shadow	Egress	17	7	43		II.	Shadow	Egress	24	15	49	
III.	Transit	Egress	17	10	12		II.	Transit	Egress	24	17	18	
II.	Shadow	Ingress	17	10	36		I.	Occult.	Reapp.	24	18	14	
II.	Transit	Ingress	17	11	51		I.	Shadow	Ingress	25	12	30	
II.	Shadow	Egress	17	13	14		I.	Transit	Ingress	25	13	14	
I.	Eclipse	Disapp.	17	13	26	4.4	I.	Shadow	Egress	25	14	43	
II.	Transit	Egress	17	14	30		I.	Transit	Egress	25	15	27	
I.	Occult.	Reapp. W.	17	16	14		II.	Eclipse	Disapp.	26	7	43	36.7
I.	Shadow	Ingress	18	10	36		I.	Eclipse	Disapp.	26	9	48	41.5
I.	Transit	Ingress	18	11	14		II.	Occult.	Reapp.	26	11	52	
I.	Shadow	Egress	18	12	49		I.	Occult.	Reapp.	26	12	45	
I.	Transit	Egress	18	13	27		I.	Shadow	Ingress	27	6	59	
II.	Eclipse	Disapp.	19	5	5	42.5	I.	Transit	Ingress	27	7	44	
I.	Eclipse	Disapp.	19	7	54	36.4	I.	Shadow	Egress	27	9	12	
II.	Occult.	Reapp.	19	9	1		I.	Transit	Egress	27	9	57	
I.	Occult.	Reapp.	19	10	44		III.	Eclipse	Disapp.	27	23	16	59.8
I.	Shadow	Ingress	20	5	5		III.	Eclipse	Reapp.	28	1	30	21.8
I.	Transit	Ingress	20	5	44		III.	Occult.	Disapp.	28	2	18	
I.	Shadow	Egress	20	7	18		II.	Shadow	Ingress	28	2	28	
I.	Transit	Egress	20	7	57		II.	Transit	Ingress	28	4	4	
III.	Eclipse	Disapp.	20	19	16	10.4	I.	Eclipse	Disapp.	28	4	17	11.6
III.	Eclipse	Reapp.	20	21	30	29.6	III.	Occult.	Reapp.	28	4	47	
III.	Occult.	Disapp.	20	21	49		II.	Shadow	Egress	28	5	6	

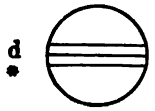
WASHINGTON MEAN TIME.

MAY.

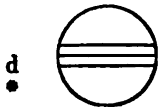
			d.	h.	m.	s.				d.	h.	m.	s.
II.	Transit	Egress	28	6	42		I.	Shadow	Egress	30	22	9	
I.	Occult.	Reapp.	28	7	15		I.	Transit	Egress	30	22	58	
I.	Shadow	Ingress	29	1	27		III.	Shadow	Ingress	31	13	16	
I.	Transit	Ingress	29	2	15		III.	Shadow	Egress W.	31	15	44	
I.	Shadow	Egress	29	3	40		II.	Shadow	Ingress W.	31	15	46	
I.	Transit	Egress	29	4	27		III.	Transit	Ingress	31	16	38	
II.	Eclipse	Disapp.	29	21	2	0.1	I.	Eclipse	Disapp.	31	17	14	12.0
I.	Eclipse	Disapp.	29	22	45	40.8	II.	Transit	Ingress	31	17	28	
II.	Occult.	Reapp.	30	1	16		II.	Shadow	Egress	31	18	24	
I.	Occult.	Reapp.	30	1	45		III.	Transit	Egress	31	19	5	
I.	Shadow	Ingress	30	19	56		II.	Transit	Egress	31	20	5	
I.	Transit	Ingress	30	20	45		I.	Occult.	Reapp.	31	20	15	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

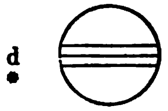
I.



III.



II.



IV. *Not Eclipsed.*

JUNE.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Shadow	Ingress	1	14	25		III.	Occult.	Disapp.	4	6	46	
I.	Transit	Ingress	1	15	15		II.	Transit	Ingress	4	6	52	
I.	Shadow	Egress	1	16	38		II.	Shadow	Egress	4	7	41	
I.	Transit	Egress	1	17	28		III.	Occult.	Reapp.	4	9	12	
II.	Eclipse	Disapp.	2	10	21	29.3	I.	Occult.	Reapp.	4	9	15	
I.	Eclipse	Disapp.	2	11	42	42.1	II.	Transit	Egress	4	9	29	
II.	Occult.	Reapp.	2	14	42		I.	Shadow	Ingress	5	3	22	
I.	Occult.	Reapp.	2	14	45		I.	Transit	Ingress	5	4	15	
I.	Shadow	Ingress	3	8	53		I.	Shadow	Egress	5	5	35	
I.	Transit	Ingress	3	9	45		I.	Transit	Egress	5	6	28	
I.	Shadow	Egress	3	11	6		II.	Eclipse	Disapp.	5	23	39	51.1
I.	Transit	Egress	3	11	58		I.	Eclipse	Disapp.	6	0	39	39.0
III.	Eclipse	Disapp.	4	3	18	9.4	I.	Occult.	Reapp.	6	3	45	
II.	Shadow	Ingress	4	5	3		II.	Occult.	Reapp.	6	4	6	
III.	Eclipse	Reapp.	4	5	30	35.2	I.	Shadow	Ingress	6	21	51	
I.	Eclipse	Disapp.	4	6	11	10.8	I.	Transit	Ingress	6	22	45	

WASHINGTON MEAN TIME.

JUNE.

			d.	h.	m.	s.
I.	Shadow	Egress	7	0	4	
I.	Transit	Egress	7	0	58	
III.	Shadow	Ingress	7	17	17	
II.	Shadow	Ingress	7	18	21	
I.	Eclipse	Disapp.	7	19	8	8.7
III.	Shadow	Egress	7	19	44	
II.	Transit	Ingress	7	20	15	
II.	Shadow	Egress	7	20	58	
III.	Transit	Ingress	7	21	5	
I.	Occult.	Reapp.	7	22	15	
II.	Transit	Egress	7	22	52	
III.	Transit	Egress	7	23	29	
I.	Shadow	Ingress	8	16	19	
I.	Transit	Ingress	8	17	15	
I.	Shadow	Egress	8	18	32	
I.	Transit	Egress	8	19	28	
II.	Eclipse	Disapp.	9	12	59	19.4
I.	Eclipse	Disapp.	9	13	36	38.1
I.	Occult.	Reapp.	9	16	44	
II.	Occult.	Reapp.	9	17	31	
I.	Shadow	Ingress	10	10	48	
I.	Transit	Ingress	10	11	45	
I.	Shadow	Egress	10	13	1	
I.	Transit	Egress	10	13	58	
III.	Eclipse	Disapp.	11	7	19	9.7
II.	Shadow	Ingress	11	7	38	
I.	Eclipse	Disapp.	11	8	5	5.6
III.	Eclipse	Reapp.	11	9	30	40.3
II.	Transit	Ingress	11	9	39	
II.	Shadow	Egress	11	10	15	
III.	Occult.	Disapp.	11	11	11	
I.	Occult.	Reapp.	11	11	14	
II.	Transit	Egress	11	12	15	
III.	Occult.	Reapp.	11	13	34	
I.	Shadow	Ingress	12	5	17	
I.	Transit	Ingress	12	6	15	
I.	Shadow	Egress	12	7	29	
I.	Transit	Egress	12	8	28	
II.	Eclipse	Disapp.	13	2	17	39.3
I.	Eclipse	Disapp.	13	2	33	33.1
I.	Occult.	Reapp.	13	5	44	
II.	Occult.	Reapp.	13	6	55	
I.	Shadow	Ingress	13	23	45	
I.	Transit	Ingress	14	0	45	
I.	Shadow	Egress	14	1	58	
I.	Transit	Egress	14	2	58	
II.	Shadow	Ingress	14	20	55	
I.	Eclipse	Disapp.	14	21	2	1.7
III.	Shadow	Ingress	14	21	18	
II.	Transit	Ingress	14	23	2	
II.	Shadow	Egress	14	23	32	
III.	Shadow	Egress	14	23	44	
I.	Occult.	Reapp.	15	0	14	
III.	Transit	Ingress	15	1	29	
II.	Transit	Egress	15	1	38	
III.	Transit	Egress	15	3	51	
I.	Shadow	Ingress	15	18	14	
I.	Transit	Ingress	15	19	16	
I.	Shadow	Egress	15	20	27	
I.	Transit	Egress	15	21	28	
I.	Eclipse	Disapp. W.	16	15	30	30.0
II.	Eclipse	Disapp. W.	16	15	37	6.2
I.	Occult.	Reapp.	16	18	43	
II.	Occult.	Reapp.	16	20	20	
I.	Shadow	Ingress	17	12	42	
I.	Transit	Ingress	17	13	46	
I.	Shadow	Egress W.	17	14	55	
I.	Transit	Egress	17	15	58	
I.	Eclipse	Disapp.	18	9	58	56.7
II.	Shadow	Ingress	18	10	12	
III.	Eclipse	Disapp.	18	11	20	40.2
II.	Transit	Ingress	18	12	25	
II.	Shadow	Egress	18	12	49	
I.	Occult.	Reapp.	18	13	13	
III.	Eclipse	Reapp.	18	13	31	16.6
II.	Transit	Egress W.	18	15	0	
III.	Occult.	Disapp. W.	18	15	36	
III.	Occult.	Reapp.	18	17	56	
I.	Shadow	Ingress	19	7	11	
I.	Transit	Ingress	19	8	16	
I.	Shadow	Egress	19	9	24	
I.	Transit	Egress	19	10	28	
I.	Eclipse	Disapp.	20	4	27	23.4
II.	Eclipse	Disapp.	20	4	55	24.1
I.	Occult.	Reapp.	20	7	43	
II.	Occult.	Reapp.	20	9	43	
I.	Shadow	Ingress	21	1	39	
I.	Transit	Ingress	21	2	46	
I.	Shadow	Egress	21	3	52	
I.	Transit	Egress	21	4	58	
I.	Eclipse	Disapp.	21	22	55	50.7
II.	Shadow	Ingress	21	23	30	
III.	Shadow	Ingress	22	1	19	
II.	Transit	Ingress	22	1	47	
II.	Shadow	Egress	22	2	7	
I.	Occult.	Reapp.	22	2	12	
III.	Shadow	Egress	22	3	44	
II.	Transit	Egress	22	4	22	

WASHINGTON MEAN TIME.

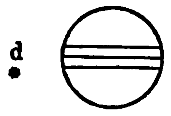
JUNE.

			d.	h.	m.	s.
III.	Transit	Ingress	22	5	52	
III.	Transit	Egress	22	8	11	
I.	Shadow	Ingress	22	20	8	
I.	Transit	Ingress	22	21	16	
I.	Shadow	Egress	22	22	21	
I.	Transit	Egress	22	23	28	
I.	Eclipse	Disapp.	23	17	24	18.5
II.	Eclipse	Disapp.	23	18	14	48.6
I.	Occult.	Reapp.	23	20	42	
II.	Occult.	Reapp.	23	23	7	
I.	Shadow	Ingress W.	24	14	36	
I.	Transit	Ingress W.	24	15	46	
I.	Shadow	Egress	24	16	49	
I.	Transit	Egress	24	17	58	
I.	Eclipse	Disapp.	25	11	52	44.1
II.	Shadow	Ingress	25	12	47	
II.	Transit	Ingress W.	25	15	10	
I.	Occult.	Reapp. W.	25	15	11	
III.	Eclipse	Disapp. W.	25	15	21	29.2
II.	Shadow	Egress W.	25	15	24	
III.	Eclipse	Reapp.	25	17	31	12.6
II.	Transit	Egress	25	17	44	
III.	Occult.	Disapp.	25	19	57	
III.	Occult.	Reapp.	25	22	14	
I.	Shadow	Ingress	26	9	5	
I.	Transit	Ingress	26	10	15	
I.	Shadow	Egress	26	11	18	

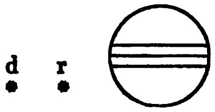
			d.	h.	m.	s.
I.	Transit	Egress	26	12	27	
I.	Eclipse	Disapp.	27	6	21	10.2
II.	Eclipse	Disapp.	27	7	33	4.8
I.	Occult.	Reapp.	27	9	41	
II.	Occult.	Reapp.	27	12	30	
I.	Shadow	Ingress	28	3	33	
I.	Transit	Ingress	28	4	45	
I.	Shadow	Egress	28	5	46	
I.	Transit	Egress	28	6	57	
I.	Eclipse	Disapp.	29	0	49	36.8
II.	Shadow	Ingress	29	2	4	
I.	Occult.	Reapp.	29	4	10	
II.	Transit	Ingress	29	4	31	
II.	Shadow	Egress	29	4	41	
III.	Shadow	Ingress	29	5	20	
II.	Transit	Egress	29	7	6	
III.	Shadow	Egress	29	7	45	
III.	Transit	Ingress	29	10	13	
III.	Transit	Egress	29	12	28	
I.	Shadow	Ingress	29	22	2	
I.	Transit	Ingress	29	23	15	
I.	Shadow	Egress	30	0	15	
I.	Transit	Egress	30	1	27	
I.	Eclipse	Disapp.	30	19	18	4.0
II.	Eclipse	Disapp.	30	20	52	26.3
I.	Occult.	Reapp.	30	22	40	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

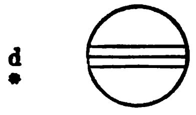
I.



III.



II.



IV. *Not Eclipsed.*

WASHINGTON MEAN TIME.

JULY.

			d.	h.	m.	s.				d.	h.	m.	s.
II.	Occult.	Reapp.	1	1	53		I.	Shadow	Egress	8	20	38	
I.	Shadow	Ingress	1	16	31		I.	Transit	Egress	8	21	54	
I.	Transit	Ingress	1	17	44		I.	Eclipse	Disapp. W.	9	15	40	12.3
I.	Shadow	Egress	1	18	44		II.	Shadow	Ingress	9	17	56	
I.	Transit	Egress	1	19	56		I.	Occult.	Reapp.	9	19	7	
I.	Eclipse	Disapp. W.	2	13	46	28.2	II.	Shadow	Egress	9	20	33	
II.	Shadow	Ingress W.	2	15	22		II.	Transit	Ingress	9	20	35	
I.	Occult.	Reapp.	2	17	9		II.	Transit	Egress	9	23	8	
II.	Transit	Ingress	2	17	53		III.	Eclipse	Disapp.	9	23	22	35.7
II.	Shadow	Egress	2	17	58		III.	Eclipse	Reapp.	10	1	30	36.3
III.	Eclipse	Disapp.	2	19	22	13.2	III.	Occult.	Disapp.	10	4	33	
II.	Transit	Egress	2	20	27		III.	Occult.	Reapp.	10	6	43	
III.	Eclipse	Reapp.	2	21	31	4.6	I.	Shadow	Ingress	10	12	54	
III.	Occult.	Disapp.	3	0	17		I.	Transit	Ingress W.	10	14	12	
III.	Occult.	Reapp.	3	2	30		I.	Shadow	Egress W.	10	15	7	
I.	Shadow	Ingress	3	11	0		I.	Transit	Egress	10	16	24	
I.	Transit	Ingress	3	12	14		I.	Eclipse	Disapp.	11	10	8	37.2
I.	Shadow	Egress	3	13	13		II.	Eclipse	Disapp.	11	12	48	10.0
I.	Transit	Egress W.	3	14	26		I.	Occult.	Reapp. W.	11	13	36	
I.	Eclipse	Disapp.	4	8	14	54.6	II.	Eclipse	Reapp. W.	11	15	19	44.4
II.	Eclipse	Reapp.	4	10	10	40.1	II.	Occult.	Disapp. W.	11	15	26	
I.	Occult.	Disapp.	4	11	39		II.	Occult.	Reapp.	11	17	59	
II.	Occult.	Reapp. W.	4	15	15		I.	Shadow	Ingress	12	7	22	
I.	Shadow	Ingress	5	5	28		I.	Transit	Ingress	12	8	41	
I.	Transit	Ingress	5	6	43		I.	Shadow	Egress	12	9	35	
I.	Shadow	Egress	5	7	41		I.	Transit	Egress	12	10	53	
I.	Transit	Egress	5	8	55		I.	Eclipse	Disapp.	13	4	37	2.4
I.	Eclipse	Disapp.	6	2	43	20.6	II.	Shadow	Ingress	13	7	13	
II.	Shadow	Ingress	6	4	39		I.	Occult.	Reapp.	13	8	5	
I.	Occult.	Reapp.	6	6	8		II.	Shadow	Egress	13	9	50	
II.	Transit	Ingress	6	7	14		II.	Transit	Ingress	13	9	55	
II.	Shadow	Egress	6	7	15		II.	Transit	Egress	13	12	28	
III.	Shadow	Ingress	6	9	21		III.	Shadow	Ingress W.	13	13	23	
II.	Transit	Egress	6	9	47		III.	Shadow	Egress W.	13	15	46	
III.	Shadow	Egress	6	11	45		III.	Transit	Ingress	13	18	47	
III.	Transit	Ingress W.	6	14	31		III.	Transit	Egress	13	20	56	
III.	Transit	Egress	6	16	43		I.	Shadow	Ingress	14	1	51	
I.	Shadow	Ingress	6	23	57		I.	Transit	Ingress	14	3	10	
I.	Transit	Ingress	7	1	13		I.	Shadow	Egress	14	4	4	
I.	Shadow	Egress	7	2	10		I.	Transit	Egress	14	5	22	
I.	Transit	Egress	7	3	25		I.	Eclipse	Disapp.	14	23	5	29.3
I.	Eclipse	Disapp.	7	21	11	47.6	II.	Eclipse	Disapp.	15	2	7	24.2
II.	Eclipse	Disapp.	7	23	29	58.3	I.	Occult.	Reapp.	15	2	34	
I.	Occult.	Reapp.	8	0	38		II.	Eclipse	Reapp.	15	4	38	49.6
II.	Eclipse	Reapp.	8	2	1	41.5	II.	Occult.	Disapp.	15	4	49	
II.	Occult.	Disapp.	8	2	5		II.	Occult.	Reapp.	15	7	21	
II.	Occult.	Reapp.	8	4	38		I.	Shadow	Ingress	15	20	19	
I.	Shadow	Ingress	8	18	25		I.	Transit	Ingress	15	21	40	
I.	Transit	Ingress	8	19	42		I.	Shadow	Egress	15	22	32	

WASHINGTON MEAN TIME.

JULY.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Egress	15	23	52		I.	Eclipse	Disapp.	23	19	27	33.3
I.	Eclipse	Disapp.	16	17	33	53.3	I.	Occult.	Reapp.	23	22	59	
II.	Shadow	Ingress	16	20	29		II.	Shadow	Ingress	22	23	5	
I.	Occult.	Reapp.	16	21	3		II.	Shadow	Egress	24	1	41	
II.	Shadow	Egress	16	23	6		II.	Transit	Ingress	24	1	55	
II.	Transit	Ingress	16	23	16		II.	Transit	Egress	24	4	26	
II.	Transit	Egress	17	1	48		III.	Eclipse	Disapp.	24	7	23	46.6
III.	Eclipse	Disapp.	17	3	22	58.5	III.	Eclipse	Reapp.	24	9	30	9.2
III.	Eclipse	Reapp.	17	5	30	9.5	III.	Occult.	Disapp. W.	24	12	56	
III.	Occult.	Disapp.	17	8	46		III.	Occult.	Reapp. W.	24	15	1	
III.	Occult.	Reapp.	17	10	53		I.	Shadow	Ingress	24	16	43	
I.	Shadow	Ingress W.	17	14	48		I.	Transit	Ingress	24	18	5	
I.	Transit	Ingress	17	16	9		I.	Shadow	Egress	24	18	55	
I.	Shadow	Egress	17	17	1		I.	Transit	Egress	24	20	17	
I.	Transit	Egress	17	18	21		I.	Eclipse	Disapp. W.	25	13	55	58.4
I.	Eclipse	Disapp.	18	12	2	18.2	I.	Occult.	Reapp.	25	17	28	
II.	Eclipse	Disapp. W.	18	15	25	33.6	II.	Eclipse	Disapp.	25	18	2	50.8
I.	Occult.	Reapp. W.	18	15	32		II.	Eclipse	Reapp.	25	20	33	49.0
II.	Eclipse	Reapp.	18	17	56	50.0	II.	Occult.	Disapp.	25	20	51	
II.	Occult.	Disapp.	18	18	9		II.	Occult.	Reapp.	25	23	22	
II.	Occult.	Reapp.	18	20	41		I.	Shadow	Ingress	26	11	11	
I.	Shadow	Ingress	19	9	17		I.	Transit	Ingress W.	26	12	34	
I.	Transit	Ingress	19	10	38		I.	Shadow	Egress W.	26	13	24	
I.	Shadow	Egress	19	11	30		I.	Transit	Egress W.	26	14	46	
I.	Transit	Egress	19	12	50		I.	Eclipse	Disapp.	27	8	24	22.5
I.	Eclipse	Disapp.	20	6	30	42.6	I.	Occult.	Reapp.	27	11	57	
II.	Shadow	Ingress	20	9	48		II.	Shadow	Ingress W.	27	12	23	
I.	Occult.	Reapp.	20	10	1		II.	Shadow	Egress W.	27	14	58	
II.	Shadow	Egress	20	12	24		II.	Transit	Ingress W.	27	15	13	
II.	Transit	Ingress	26	12	35		II.	Transit	Egress	27	17	44	
II.	Transit	Egress W.	20	15	7		III.	Shadow	Ingress	27	21	24	
III.	Shadow	Ingress	20	17	24		III.	Shadow	Egress	27	23	46	
III.	Shadow	Egress	20	19	46		III.	Transit	Ingress	28	3	8	
III.	Transit	Ingress	20	22	59		III.	Transit	Egress	28	5	10	
III.	Transit	Egress	21	1	5		I.	Shadow	Ingress	28	5	40	
I.	Shadow	Ingress	21	3	45		I.	Transit	Ingress	28	7	3	
I.	Transit	Ingress	21	5	7		I.	Shadow	Egress	28	7	53	
I.	Shadow	Egress	21	5	58		I.	Transit	Egress	28	9	15	
I.	Transit	Egress	21	7	19		I.	Eclipse	Disapp.	29	2	52	49.7
I.	Eclipse	Disapp.	22	0	59	9.6	I.	Occult.	Reapp.	29	6	26	
I.	Occult.	Reapp.	22	4	30		II.	Eclipse	Disapp.	29	7	21	55.6
II.	Eclipse	Disapp.	22	4	44	43.2	II.	Eclipse	Reapp.	29	9	52	44.6
II.	Eclipse	Disapp.	22	7	15	50.6	II.	Occult.	Disapp.	29	10	11	
II.	Occult.	Reapp.	22	7	30		II.	Occult.	Reapp. W.	29	12	42	
II.	Occult.	Reapp.	22	10	2		I.	Shadow	Ingress	30	0	8	
I.	Shadow	Ingress	22	22	14		I.	Transit	Ingress	30	1	32	
I.	Transit	Ingress	22	23	36		I.	Shadow	Egress	30	2	21	
I.	Shadow	Egress	23	0	27		I.	Transit	Egress	30	3	44	
I.	Transit	Egress	23	1	48		I.	Eclipse	Disapp.	30	21	21	13.2

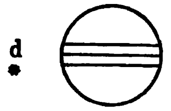
WASHINGTON MEAN TIME.

JULY.

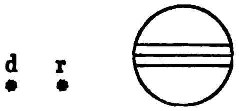
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Occult.	Reapp.	31	0	55		III.	Occult.	Disapp.	31	17	3	
II.	Shadow	Ingress	31	1	40		I.	Shadow	Ingress	31	18	37	
II.	Shadow	Egress	31	4	16		III.	Occult.	Reapp.	31	19	4	
II.	Transit	Ingress	31	4	32		I.	Transit	Ingress	31	20	1	
II.	Transit	Egress	31	7	3		I.	Shadow	Egress	31	20	50	
III.	Eclipse	Disapp.	31	11	24	27.1	I.	Transit	Egress	31	22	13	
III.	Eclipse	Reapp. W.	31	13	30	2.7							

Phases of the Eclipses of the Satellites for an Inverting Telescope.

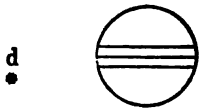
I.



III.



II.



IV. *Not Eclipsed.*

AUGUST.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Eclipse	Disapp. W.	1	15	49	38.4	III.	Transit	Egress	4	9	12	
I.	Occult.	Reapp.	1	19	23		I.	Shadow	Egress	4	9	47	
II.	Eclipse	Disapp.	1	20	40	0.7	I.	Transit	Egress	4	11	9	
II.	Eclipse	Reapp.	1	23	10	40.5	I.	Eclipse	Disapp.	5	4	46	30.0
II.	Occult.	Disapp.	1	23	29		I.	Occult.	Reapp.	5	8	20	
II.	Occult.	Reapp.	2	2	0		II.	Eclipse	Disapp.	5	9	58	59.9
I.	Shadow	Ingress W.	2	13	5		II.	Eclipse	Reapp. W.	5	12	29	30.5
I.	Transit	Ingress W.	2	14	30		II.	Occult.	Disapp. W.	5	12	49	
I.	Shadow	Egress W.	2	15	18		II.	Occult.	Reapp. W.	5	15	19	
I.	Transit	Egress	2	16	41		I.	Shadow	Ingress	6	2	2	
I.	Eclipse	Disapp.	3	10	18	2.7	I.	Transit	Ingress	6	3	27	
I.	Occult.	Reapp. W.	3	13	51		I.	Shadow	Egress	6	4	15	
II.	Shadow	Ingress W.	3	14	57		I.	Transit	Egress	6	5	37	
II.	Shadow	Egress	3	17	33		I.	Eclipse	Disapp.	6	23	14	53.8
II.	Transit	Ingress	3	17	49		I.	Occult.	Reapp.	7	2	48	
II.	Transit	Egress	3	20	20		II.	Shadow	Ingress	7	4	15	
III.	Shadow	Ingress	4	1	25		II.	Shadow	Egress	7	6	50	
III.	Shadow	Egress	4	3	46		II.	Transit	Ingress	7	7	7	
III.	Transit	Ingress	4	7	13		II.	Transit	Egress	7	9	37	
I.	Shadow	Ingress	4	7	34		III.	Eclipse	Disapp. W.	7	15	25	40.7
I.	Transit	Ingress	4	8	58		III.	Eclipse	Reapp.	7	17	30	30.5

WASHINGTON MEAN TIME.

AUGUST.

			d.	h.	m.	s.
I.	Shadow	Ingress	7	20	31	
III.	Occult.	Disapp.	7	21	6	
I.	Transit	Ingress	7	21	55	
I.	Shadow	Egress	7	22	44	
III.	Occult.	Reapp.	7	23	4	
I.	Transit	Egress	8	0	6	
I.	Eclipse	Disapp.	8	17	43	19.4
I.	Occult.	Reapp.	8	21	17	
II.	Eclipse	Disapp.	8	23	17	2.9
II.	Eclipse	Reapp.	9	1	47	24.3
II.	Occult.	Disapp.	9	2	7	
II.	Occult.	Reapp.	9	4	37	
I.	Shadow	Ingress W.	9	14	59	
I.	Transit	Ingress	9	16	24	
I.	Shadow	Egress	9	17	12	
I.	Transit	Egress	9	18	35	
I.	Eclipse	Disapp. W.	10	12	11	43.7
I.	Occult.	Reapp. W.	10	15	45	
II.	Shadow	Ingress	10	17	32	
II.	Shadow	Egress	10	20	7	
II.	Transit	Ingress	10	20	24	
II.	Transit	Egress	10	22	54	
III.	Shadow	Ingress	11	5	25	
III.	Shadow	Egress	11	7	46	
I.	Shadow	Ingress	11	9	28	
I.	Transit	Ingress	11	10	52	
III.	Transit	Ingress	11	11	13	
I.	Shadow	Egress W.	11	11	41	
I.	Transit	Egress W.	11	13	3	
III.	Transit	Egress W.	11	13	10	
I.	Eclipse	Disapp.	12	6	40	11.6
I.	Occult.	Reapp.	12	10	13	
II.	Eclipse	Disapp. W.	12	12	35	56.7
II.	Eclipse	Reapp. W.	12	15	6	8.7
II.	Occult.	Disapp. W.	12	15	25	
II.	Occult.	Reapp.	12	17	55	
I.	Shadow	Ingress	13	3	56	
I.	Transit	Ingress	13	5	21	
I.	Shadow	Egress	13	6	9	
I.	Transit	Egress	13	7	32	
I.	Eclipse	Disapp.	14	1	8	35.9
I.	Occult.	Reapp.	14	4	41	
II.	Shadow	Ingress	14	6	49	
II.	Shadow	Egress	14	9	24	
II.	Transit	Ingress	14	9	40	
II.	Transit	Egress W.	14	12	10	
III.	Eclipse	Disapp.	14	19	26	16.4
III.	Eclipse	Reapp.	14	21	30	22.0
I.	Shadow	Ingress	14	22	25	
I.	Transit	Ingress	14	23	49	
I.	Shadow	Egress	15	0	38	
III.	Occult.	Disapp.	15	1	5	
I.	Transit	Egress	15	2	0	
III.	Occult.	Reapp.	15	3	0	
I.	Eclipse	Disapp.	15	19	37	1.9
I.	Occult.	Reapp.	15	23	9	
II.	Eclipse	Disapp.	16	1	53	57.5
II.	Eclipse	Reapp.	16	4	24	0.1
II.	Occult.	Disapp.	16	4	41	
II.	Occult.	Reapp.	16	7	11	
I.	Shadow	Ingress	16	16	53	
I.	Transit	Ingress	16	18	17	
I.	Shadow	Egress	16	19	6	
I.	Transit	Egress	16	20	28	
I.	Eclipse	Disapp. W.	17	14	5	26.5
I.	Occult.	Reapp.	17	17	37	
II.	Shadow	Ingress	17	20	7	
II.	Shadow	Egress	17	22	42	
II.	Transit	Ingress	17	22	56	
II.	Transit	Egress	18	1	26	
III.	Shadow	Ingress	18	9	26	
I.	Shadow	Ingress W.	18	11	22	
III.	Shadow	Egress W.	18	11	46	
I.	Transit	Ingress W.	18	12	45	
I.	Shadow	Egress W.	18	13	35	
I.	Transit	Egress W.	18	14	56	
III.	Transit	Ingress W.	18	15	10	
III.	Transit	Egress	18	17	3	
I.	Eclipse	Disapp.	19	8	33	55.1
I.	Occult.	Reapp. W.	19	12	5	
II.	Eclipse	Disapp. W.	19	15	12	45.9
II.	Eclipse	Reapp.	19	17	42	39.1
II.	Occult.	Disapp.	19	17	59	
II.	Occult.	Reapp.	19	20	28	
I.	Shadow	Ingress	20	5	50	
I.	Transit	Ingress	20	7	13	
I.	Shadow	Egress	20	8	3	
I.	Transit	Egress	20	9	24	
I.	Eclipse	Disapp.	21	3	2	19.7
I.	Occult.	Reapp.	21	6	33	
II.	Shadow	Ingress	21	9	24	
II.	Shadow	Egress W.	21	11	59	
II.	Transit	Ingress W.	21	12	11	
II.	Transit	Egress W.	21	14	41	
III.	Eclipse	Disapp.	21	23	26	50.1
I.	Shadow	Ingress	22	0	19	
III.	Eclipse	Reapp.	22	1	30	12.9
I.	Transit	Ingress	22	1	41	

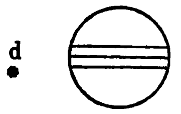
WASHINGTON MEAN TIME.

AUGUST.

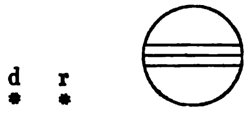
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Shadow	Egress	22	2	32		II.	Occult.	Disapp.	26	20	29	
I.	Transit	Egress	22	3	52		II.	Occult.	Reapp.	26	22	58	
III.	Occult.	Disapp.	22	4	59		I.	Shadow	Ingress	27	7	44	
III.	Occult.	Reapp.	22	6	51		I.	Transit	Ingress	27	9	5	
I.	Eclipse	Disapp.	22	21	30	46.5	I.	Shadow	Egress	27	9	57	
I.	Occult.	Reapp.	23	1	1		I.	Transit	Egress W.	27	11	15	
II.	Eclipse	Disapp.	23	4	30	44.5	I.	Eclipse	Disapp.	28	4	56	6.3
II.	Eclipse	Reapp.	23	7	0	28.3	I.	Occult.	Reapp.	28	8	23	
II.	Occult.	Disapp.	23	7	14		II.	Shadow	Ingress W.	28	11	59	
II.	Occult.	Reapp.	23	9	43		II.	Shadow	Egress W.	28	14	34	
I.	Shadow	Ingress	23	18	47		II.	Transit	Ingress W.	28	14	40	
I.	Transit	Ingress	23	20	9		II.	Transit	Egress	28	17	9	
I.	Shadow	Egress	23	21	0		I.	Shadow	Ingress	29	2	13	
I.	Transit	Egress	23	22	20		III.	Eclipse	Disapp.	29	3	27	8.9
I.	Eclipse	Disapp. W.	24	15	59	11.3	I.	Transit	Ingress	29	3	33	
I.	Occult.	Reapp.	24	19	28		I.	Shadow	Egress	29	4	26	
II.	Shadow	Ingress	24	22	42		III.	Eclipse	Reapp.	29	5	29	50.5
II.	Shadow	Egress	25	1	17		I.	Transit	Egress	29	5	43	
II.	Transit	Ingress	25	1	26		III.	Occult.	Disapp.	29	8	48	
II.	Transit	Egress	25	3	55		III.	Occult.	Reapp. W.	29	10	38	
I.	Shadow	Ingress W.	25	13	16		I.	Eclipse	Disapp.	29	23	24	34.2
III.	Shadow	Ingress W.	25	13	27		I.	Occult.	Reapp.	30	2	51	
I.	Transit	Ingress W.	25	14	37		II.	Eclipse	Disapp.	30	7	7	24.2
I.	Shadow	Egress W.	25	15	29		II.	Eclipse	Reapp.	30	9	36	49.2
III.	Shadow	Egress W.	25	15	46		II.	Occult.	Disapp.	30	9	44	
I.	Transit	Egress	25	16	47		II.	Occult.	Reapp. W.	30	12	12	
III.	Transit	Ingress	25	19	2		I.	Shadow	Ingress	30	20	42	
III.	Transit	Egress	25	20	53		I.	Transit	Ingress	30	22	0	
I.	Eclipse	Disapp.	26	10	27	41.0	I.	Shadow	Egress	30	22	55	
I.	Occult.	Reapp. W.	26	13	56		I.	Transit	Egress	31	0	10	
II.	Eclipse	Disapp.	26	17	49	27.2	I.	Eclipse	Disapp.	31	17	52	59.8
II.	Eclipse	Reapp.	26	20	19	1.6	I.	Occult.	Reapp.	31	21	18	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

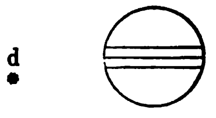
I.



III.



II.



IV. *Not Eclipsed.*

WASHINGTON MEAN TIME.

SEPTEMBER.

			d.	h.	m.	s.
II.	Shadow	Ingress	1	1	17	
II.	Shadow	Egress	1	3	52	
II.	Transit	Ingress	1	3	54	
II.	Transit	Egress	1	6	23	
I.	Shadow	Ingress W.	1	15	10	
I.	Transit	Ingress W.	1	16	28	
I.	Shadow	Egress	1	17	23	
III.	Shadow	Ingress	1	17	29	
I.	Transit	Egress	1	18	38	
III.	Shadow	Egress	1	19	47	
III.	Transit	Ingress	1	22	49	
III.	Transit	Egress	2	0	38	
I.	Eclipse	Disapp. W.	2	12	21	30.6
I.	Occult.	Reapp. W.	2	15	46	
II.	Eclipse	Disapp.	2	20	26	0.2
II.	Eclipse	Reapp.	2	22	55	15.8
II.	Occult.	Disapp.	2	22	58	
II.	Occult.	Reapp.	3	1	26	
I.	Shadow	Ingress	3	9	39	
I.	Transit	Ingress W.	3	10	55	
I.	Shadow	Egress W.	3	11	52	
I.	Transit	Egress W.	3	13	5	
I.	Eclipse	Disapp.	4	6	49	56.8
I.	Occult.	Reapp. W.	4	10	13	
II.	Shadow	Ingress W.	4	14	35	
II.	Transit	Ingress	4	17	7	
II.	Shadow	Egress	4	17	9	
II.	Transit	Egress	4	19	35	
I.	Shadow	Ingress	5	4	8	
I.	Transit	Ingress	5	5	22	
I.	Shadow	Egress	5	6	20	
III.	Eclipse	Disapp.	5	7	27	34.0
I.	Transit	Egress	5	7	33	
III.	Eclipse	Reapp.	5	9	29	35.8
III.	Occult.	Disapp. W.	5	12	32	
III.	Occult.	Reapp. W.	5	14	19	
I.	Eclipse	Disapp.	6	1	18	26.0
I.	Occult.	Reapp.	6	4	41	
II.	Eclipse	Disapp. W.	6	9	43	57.0
II.	Occult.	Reapp. W.	6	14	39	
I.	Shadow	Ingress	6	22	36	
I.	Transit	Ingress	6	23	50	
I.	Shadow	Egress	7	0	49	
I.	Transit	Egress	7	2	0	
I.	Eclipse	Disapp.	7	19	46	52.7
I.	Occult.	Reapp.	7	23	8	
II.	Shadow	Ingress	8	3	52	
II.	Transit	Ingress	8	6	20	
II.	Shadow	Egress	8	6	27	
II.	Transit	Egress	8	8	48	
I.	Shadow	Ingress	8	17	5	
I.	Transit	Ingress	8	18	17	
I.	Shadow	Egress	8	19	18	
I.	Transit	Egress	8	20	27	
III.	Shadow	Ingress	8	21	29	
III.	Shadow	Egress	8	23	47	
III.	Transit	Ingress	9	2	32	
III.	Transit	Egress	9	4	17	
I.	Eclipse	Disapp. W.	9	14	15	24.6
I.	Occult.	Reapp.	3	17	35	
II.	Eclipse	Disapp.	9	23	2	28.6
II.	Occult.	Reapp.	10	3	52	
I.	Shadow	Ingress W.	10	11	33	
I.	Transit	Ingress W.	10	12	44	
I.	Shadow	Egress W.	10	13	45	
I.	Transit	Egress W.	10	14	54	
I.	Eclipse	Disapp.	11	8	43	52.3
I.	Occult.	Reapp. W.	11	12	2	
II.	Shadow	Ingress	11	17	10	
II.	Transit	Ingress	11	19	32	
II.	Shadow	Egress	11	19	45	
II.	Transit	Egress	11	22	0	
I.	Shadow	Ingress	12	6	2	
I.	Transit	Ingress	12	7	11	
I.	Shadow	Egress	12	8	14	
I.	Transit	Egress W.	12	9	21	
III.	Eclipse	Disapp. W.	12	11	28	31.0
III.	Eclipse	Reapp. W.	12	13	29	54.8
III.	Occult.	Disapp. W.	12	16	12	
III.	Occult.	Reapp.	12	17	57	
I.	Eclipse	Disapp.	13	3	12	22.8
I.	Occult.	Reapp.	13	6	29	
II.	Eclipse	Disapp. W.	13	12	20	23.1
II.	Occult.	Reapp.	13	17	4	
I.	Shadow	Ingress	14	0	30	
I.	Transit	Ingress	14	1	38	
I.	Shadow	Egress	14	2	42	
I.	Transit	Egress	14	3	48	
I.	Eclipse	Disapp.	14	21	40	50.6
I.	Occult.	Reapp.	15	0	56	
II.	Shadow	Ingress	15	6	28	
II.	Transit	Ingress	15	8	43	
II.	Shadow	Egress	15	9	2	
II.	Transit	Egress W.	15	11	11	
I.	Shadow	Ingress	15	18	59	
I.	Transit	Ingress	15	20	5	
I.	Shadow	Egress	15	21	11	
I.	Transit	Egress	15	22	15	

WASHINGTON MEAN TIME.

SEPTEMBER.

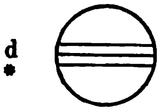
			d.	h.	m.	s.				d.	h.	m.	s.
III.	Shadow	Ingress	16	1	30		III.	Transit	Egress W.	23	11	22	
III.	Shadow	Egress	16	3	47		I.	Eclipse	Disapp.	23	18	3	29.5
III.	Transit	Ingress	16	6	8		I.	Occult.	Reapp.	23	21	10	
III.	Transit	Egress	16	7	52		II.	Eclipse	Disapp.	24	4	15	4.0
I.	Eclipse	Disapp. W.	16	16	9	24.0	II.	Occult.	Reapp. W.	24	8	36	
I.	Occult.	Reapp.	16	19	23		I.	Shadow	Ingress W.	24	15	21	
II.	Eclipse	Disapp.	17	1	38	49.3	I.	Transit	Ingress W.	24	16	19	
II.	Occult.	Reapp.	17	6	15		I.	Shadow	Egress	24	17	34	
I.	Shadow	Ingress W.	17	13	27		I.	Transit	Egress	24	18	29	
I.	Transit	Ingress W.	17	14	32		I.	Eclipse	Disapp. W.	25	12	32	0.1
I.	Shadow	Egress W.	17	15	39		I.	Occult.	Reapp. W.	25	15	36	
I.	Transit	Egress W.	17	16	42		II.	Shadow	Ingress	25	22	21	
I.	Eclipse	Disapp. W.	18	10	37	53.1	II.	Transit	Ingress	26	0	14	
I.	Occult.	Reapp. W.	18	13	50		II.	Shadow	Egress	26	0	56	
II.	Shadow	Ingress	18	19	46		II.	Transit	Egress	26	2	41	
II.	Transit	Ingress	18	21	54		I.	Shadow	Ingress W.	26	9	50	
II.	Shadow	Egress	18	22	20		I.	Transit	Ingress W.	26	10	45	
II.	Transit	Egress	19	0	21		I.	Shadow	Egress W.	26	12	2	
I.	Shadow	Ingress	19	7	56		I.	Transit	Egress W.	26	12	55	
I.	Transit	Ingress W.	19	8	59		III.	Eclipse	Disapp.	26	19	30	53.5
I.	Shadow	Egress W.	19	10	8		III.	Eclipse	Reapp.	26	21	31	6.3
I.	Transit	Egress W.	19	11	9		III.	Occult.	Disapp.	26	23	17	
III.	Eclipse	Disapp. W.	19	15	29	23.6	III.	Occult.	Reapp.	27	0	58	
III.	Eclipse	Reapp.	19	17	30	11.0	I.	Eclipse	Disapp.	27	7	0	34.1
III.	Occult.	Disapp.	19	19	46		I.	Occult.	Reapp. W.	27	10	3	
III.	Occult.	Reapp.	19	21	29		II.	Eclipse	Disapp. W.	27	17	32	57.1
I.	Eclipse	Disapp.	20	5	6	25.3	II.	Occult.	Reapp. W.	27	21	46	
I.	Occult.	Reapp.	20	8	16		I.	Shadow	Ingress	28	4	18	
II.	Eclipse	Disapp. W.	20	14	56	43.0	I.	Transit	Ingress	28	5	12	
II.	Occult.	Reapp.	20	19	26		I.	Shadow	Egress	28	6	30	
I.	Shadow	Ingress	21	2	24		I.	Transit	Egress	28	7	22	
I.	Transit	Ingress	21	3	25		I.	Eclipse	Disapp.	29	1	29	4.9
I.	Shadow	Egress	21	4	36		I.	Occult.	Reapp.	29	4	29	
I.	Transit	Egress	21	5	35		II.	Shadow	Ingress W.	29	11	39	
I.	Eclipse	Disapp.	21	23	34	54.5	II.	Transit	Ingress W.	29	13	24	
I.	Occult.	Reapp.	22	2	43		II.	Shadow	Egress W.	29	14	14	
II.	Shadow	Ingress W.	22	9	4		II.	Transit	Egress W.	29	15	51	
II.	Transit	Ingress W.	22	11	5		I.	Shadow	Ingress	29	22	47	
II.	Shadow	Egress W.	22	11	38		I.	Transit	Ingress	29	23	38	
II.	Transit	Egress W.	22	13	32		I.	Shadow	Egress	30	0	59	
I.	Shadow	Ingress	22	20	53		I.	Transit	Egress	30	1	48	
I.	Transit	Ingress	22	21	52		III.	Shadow	Ingress W.	30	9	31	
I.	Shadow	Egress	22	23	5		III.	Shadow	Egress W.	30	11	47	
I.	Transit	Egress	23	0	2		III.	Transit	Ingress W.	30	13	7	
III.	Shadow	Ingress	23	5	31		III.	Transit	Egress W.	30	14	48	
III.	Shadow	Egress	23	7	47		I.	Eclipse	Disapp.	30	19	57	41.8
III.	Transit	Ingress W.	23	9	40		I.	Occult.	Reapp.	30	22	56	

WASHINGTON MEAN TIME.

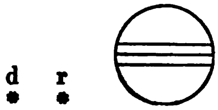
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

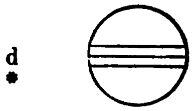
I.



III.



II.



IV. *Not Eclipsed.*

OCTOBER.

			d.	h.	m.	s.
II	Eclipse	Disapp.	1	6	51	13.3
II.	Occult.	Reapp. W.	1	10	55	
I.	Shadow	Ingress W.	1	17	16	
I.	Transit	Ingress	1	18	5	
I.	Shadow	Egress	1	19	28	
I.	Transit	Egress	1	20	15	
I.	Eclipse	Disapp. W.	2	14	26	14.2
I.	Occult.	Reapp. W.	2	17	22	
II.	Shadow	Ingress	3	0	57	
II.	Transit	Ingress	3	2	33	
II.	Shadow	Egress	3	3	31	
II.	Transit	Egress	3	5	0	
I.	Shadow	Ingress W.	3	11	44	
I.	Transit	Ingress W.	3	12	31	
I.	Shadow	Egress W.	3	13	56	
I.	Transit	Egress W.	3	14	41	
III.	Eclipse	Disapp.	3	23	31	51.0
III.	Eclipse	Reapp.	4	1	31	30.8
III.	Occult.	Disapp.	4	2	42	
III.	Occult.	Reapp.	4	4	23	
I.	Eclipse	Disapp. W.	4	8	54	50.3
I.	Occult.	Reapp. W.	4	11	48	
II.	Eclipse	Disapp.	4	20	9	6.2
II.	Occult.	Reapp.	5	0	4	
I.	Shadow	Ingress	5	6	13	
I.	Transit	Ingress	5	6	57	
I.	Shadow	Egress W.	5	8	25	
I.	Transit	Egress W.	5	9	7	
I.	Eclipse	Disapp.	6	3	23	22.7
I.	Occult.	Reapp.	6	6	14	
II.	Shadow	Ingress W.	6	14	16	
II.	Transit	Ingress W.	6	15	42	
II.	Shadow	Egress W.	6	16	50	
II.	Transit	Egress	6	18	9	
I.	Shadow	Ingress	7	0	42	
I.	Transit	Ingress	7	1	23	
I.	Shadow	Egress	7	2	54	
I.	Transit	Egress	7	3	33	
III.	Shadow	Ingress W.	7	13	32	
III.	Shadow	Egress W.	7	15	48	
III.	Transit	Ingress W.	7	16	30	
III.	Transit	Egress	7	18	11	
I.	Eclipse	Disapp.	7	21	52	1.9
I.	Occult.	Reapp.	8	0	40	
II.	Eclipse	Disapp. W.	8	9	27	18.2
II.	Occult.	Reapp. W.	8	13	12	
I.	Shadow	Ingress	8	19	10	
I.	Transit	Ingress	8	19	50	
I.	Shadow	Egress	8	21	22	
I.	Transit	Egress	8	22	0	
I.	Eclipse	Disapp. W.	9	16	20	36.1
I.	Occult.	Reapp.	9	19	6	
II.	Shadow	Ingress	10	3	34	
II.	Transit	Ingress	10	4	50	
II.	Shadow	Egress	10	6	8	
II.	Transit	Egress	10	7	17	
I.	Shadow	Ingress W.	10	13	39	
I.	Transit	Ingress W.	10	14	16	
I.	Shadow	Egress W.	10	15	51	
I.	Transit	Egress W.	10	16	26	

WASHINGTON MEAN TIME.

OCTOBER.

			d.	h.	m.	s.				d.	h.	m.	s.
III.	Eclipse	Disapp.	11	3	32	50.4	II.	Occult.	Reapp.	19	4	35	
III.	Eclipse	Reapp.	11	5	31	59.0	I.	Shadow	Ingress W.	19	10	2	
III.	Occult.	Disapp.	11	6	3		I.	Transit	Ingress W.	19	10	26	
III.	Occult.	Reapp. W.	11	7	44		I.	Shadow	Egress W.	19	12	14	
I.	Eclipse	Disapp. W.	11	10	49	14.7	I.	Transit	Egress W.	19	12	36	
I.	Occult.	Reapp. W.	11	13	32		I.	Eclipse	Disapp. W.	20	7	12	24.5
II.	Eclipse	Disapp.	11	22	45	10.8	I.	Occult.	Reapp. W.	20	9	42	
II.	Occult.	Reapp.	12	2	20		II.	Shadow	Ingress	20	19	29	
I.	Shadow	Ingress W.	12	8	7		II.	Transit	Ingress	20	20	13	
I.	Transit	Ingress W.	12	8	42		II.	Shadow	Egress	20	22	3	
I.	Shadow	Egress W.	12	10	19		II.	Transit	Egress	20	22	40	
I.	Transit	Egress W.	12	10	52		I.	Shadow	Ingress	21	4	30	
I.	Eclipse	Disapp.	13	5	17	49.0	I.	Transit	Ingress	21	4	52	
I.	Occult.	Reapp. W.	13	7	58		I.	Shadow	Egress W.	21	6	42	
II.	Shadow	Ingress W.	13	16	52		I.	Transit	Egress W.	21	7	2	
II.	Transit	Ingress W.	13	17	58		III.	Shadow	Ingress	21	21	35	
II.	Shadow	Egress	13	19	26		III.	Transit	Ingress	21	23	5	
II.	Transit	Egress	13	20	25		III.	Shadow	Egress	21	23	49	
I.	Shadow	Ingress	14	2	36		III.	Transit	Egress	22	0	49	
I.	Transit	Ingress	14	3	8		I.	Eclipse	Disapp.	22	1	41	8.2
I.	Shadow	Egress	14	4	48		I.	Occult.	Reapp.	22	4	8	
I.	Transit	Egress	14	5	18		II.	Eclipse	Disapp. W.	22	14	39	17.2
III.	Shadow	Ingress W.	14	17	33		II.	Occult.	Reapp. W.	22	17	42	
III.	Shadow	Egress	14	19	48		I.	Shadow	Ingress	22	22	59	
III.	Transit	Ingress	14	19	49		I.	Transit	Ingress	22	23	18	
III.	Transit	Egress	14	21	31		I.	Shadow	Egress	23	1	11	
I.	Eclipse	Disapp.	14	23	46	30.6	I.	Transit	Egress	23	1	28	
I.	Occult.	Reapp.	15	2	24		I.	Eclipse	Disapp.	23	20	9	47.1
II.	Eclipse	Disapp. W.	15	12	3	19.3	I.	Occult.	Reapp.	23	22	34	
II.	Occult.	Reapp. W.	15	15	28		II.	Shadow	Ingress W.	24	8	47	
I.	Shadow	Ingress	15	21	5		II.	Transit	Ingress W.	24	9	19	
I.	Transit	Ingress	15	21	34		II.	Shadow	Egress W.	24	11	20	
I.	Shadow	Egress	15	23	17		II.	Transit	Egress W.	24	11	47	
I.	Transit	Egress	15	23	44		I.	Shadow	Ingress W.	24	17	28	
I.	Eclipse	Disapp.	16	18	15	7.1	I.	Transit	Ingress W.	24	17	44	
I.	Occult.	Reapp.	16	20	50		I.	Shadow	Egress	24	19	40	
II.	Shadow	Ingress	17	6	10		I.	Transit	Egress	24	19	54	
II.	Transit	Ingress W.	17	7	5		III.	Eclipse	Disapp. W.	25	11	34	46.1
II.	Shadow	Egress W.	17	8	44		III.	Occult.	Reapp. W.	25	14	19	
II.	Transit	Egress W.	17	9	32		I.	Eclipse	Disapp. W.	25	14	38	30.3
I.	Shadow	Ingress W.	17	15	33		I.	Occult.	Reapp. W.	25	17	0	
I.	Transit	Ingress W.	17	16	0		II.	Eclipse	Disapp.	26	3	57	10.6
I.	Shadow	Egress W.	17	17	45		II.	Occult.	Reapp. W.	26	6	48	
I.	Transit	Egress	17	18	10		I.	Shadow	Ingress W.	26	11	57	
III.	Eclipse	Disapp. W.	18	7	33	42.3	I.	Transit	Ingress W.	26	12	10	
III.	Occult.	Reapp. W.	18	11	2		I.	Shadow	Egress W.	26	14	9	
I.	Eclipse	Disapp. W.	18	12	43	48.0	I.	Transit	Egress W.	26	14	20	
I.	Occult.	Reapp. W.	18	15	16		I.	Eclipse	Disapp. W.	27	9	7	9.0
II.	Eclipse	Disapp.	19	1	21	12.1	I.	Occult.	Reapp. W.	27	11	26	

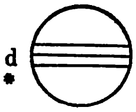
WASHINGTON MEAN TIME.

OCTOBER.

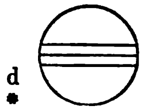
			d.	h.	m.	s.				d.	h.	m.	s.
II.	Shadow	Ingress	27	22	6		II.	Occult.	Reapp.	29	19	55	
II.	Transit	Ingress	27	22	27		I.	Shadow	Ingress	30	0	54	
II.	Shadow	Egress	28	0	39		I.	Transit	Ingress	30	1	1	
II.	Transit	Egress	28	0	55		I.	Shadow	Egress	30	3	6	
I.	Shadow	Ingress W.	28	6	25		I.	Transit	Egress	30	3	11	
I.	Transit	Ingress W.	28	6	35		I.	Eclipse	Disapp.	30	22	4	36.0
I.	Shadow	Egress W.	28	8	37		I.	Occult.	Reapp.	31	0	18	
I.	Transit	Egress W.	28	8	45		II.	Shadow	Ingress W.	31	11	24	
III.	Shadow	Ingress	29	1	36		II.	Transit	Ingress W.	31	11	34	
III.	Transit	Ingress	29	2	19		II.	Shadow	Egress W.	31	13	57	
I.	Eclipse	Disapp.	29	3	35	54.9	II.	Transit	Egress W.	31	14	2	
III.	Shadow	Egress	29	3	50		I.	Shadow	Ingress	31	19	22	
III.	Transit	Egress	29	4	5		I.	Transit	Ingress	31	19	27	
I.	Occult.	Reapp.	29	5	52		I.	Shadow	Egress	31	21	34	
II.	Eclipse	Disapp. W.	29	17	15	12.9	I.	Transit	Egress	31	21	37	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

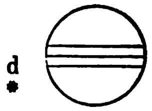
I.



III.



II.



IV. *Not Eclipsed.*

NOVEMBER.

			d.	h.	m.	s.				d.	h.	m.	s.
III.	Eclipse	Disapp. W.	1	15	36	27.9	II.	Shadow	Ingress	4	0	43	
I.	Occult.	Disapp. W.	1	16	33		II.	Transit	Egress	4	3	9	
III.	Occult.	Reapp. W.	1	17	35		II.	Shadow	Egress	4	3	16	
I.	Occult.	Reapp.	1	18	44		I.	Transit	Ingress W.	4	8	18	
II.	Eclipse	Disapp. W.	2	6	33	6.7	I.	Shadow	Ingress W.	4	8	20	
II.	Occult.	Reapp. W.	2	9	2		I.	Transit	Egress W.	4	10	29	
I.	Shadow	Ingress W.	2	13	51		I.	Shadow	Egress W.	4	10	32	
I.	Transit	Ingress W.	2	13	52		I.	Occult.	Disapp.	5	5	25	
I.	Shadow	Egress W.	2	16	3		III.	Transit	Ingress	5	5	32	
I.	Transit	Egress W.	2	16	3		III.	Shadow	Ingress	5	5	37	
I.	Occult.	Disapp. W.	3	11	0		III.	Transit	Egress W.	5	7	21	
I.	Occult.	Reapp. W.	3	13	10		I.	Eclipse	Reapp. W.	5	7	38	29.2
II.	Transit	Ingress	4	0	41		III.	Shadow	Egress W.	5	7	51	

WASHINGTON MEAN TIME.

NOVEMBER.

			d.	h.	m.	s.
II.	Occult.	Disapp.	5	19	39	
II.	Eclipse	Reapp.	5	22	17	47.6
I.	Transit	Ingress	6	2	43	
I.	Shadow	Ingress	6	2	48	
I.	Transit	Egress	6	4	54	
I.	Shadow	Egress	6	5	0	
I.	Occult.	Disapp.	6	23	51	
I.	Eclipse	Reapp.	7	2	7	12.7
II.	Transit	Ingress W.	7	13	48	
II.	Shadow	Ingress W.	7	14	2	
II.	Transit	Egress W.	7	16	16	
II.	Shadow	Egress W.	7	16	35	
I.	Transit	Ingress	7	21	9	
I.	Shadow	Ingress	7	21	17	
I.	Transit	Egress	7	23	20	
I.	Shadow	Egress	7	23	29	
I.	Occult.	Disapp.	8	18	17	
III.	Occult.	Disapp.	8	19	1	
I.	Eclipse	Reapp.	8	20	36	1.6
III.	Eclipse	Reapp.	8	21	35	29.6
II.	Occult.	Disapp. W.	9	8	46	
II.	Eclipse	Reapp. W.	9	11	35	34.8
I.	Transit	Ingress W.	9	15	35	
I.	Shadow	Ingress W.	9	15	46	
I.	Transit	Egress	9	17	46	
I.	Shadow	Egress	9	17	58	
I.	Occult.	Disapp. W	10	12	43	
I.	Eclipse	Reapp. W.	10	15	4	44.8
II.	Transit	Ingress	11	2	56	
II.	Shadow	Ingress	11	3	21	
II.	Transit	Egress	11	5	25	
II.	Shadow	Egress	11	5	54	
I.	Transit	Ingress W.	11	10	1	
I.	Shadow	Ingress W.	11	10	14	
I.	Transit	Egress W.	11	12	12	
I.	Shadow	Egress W.	11	12	26	
I.	Occult.	Disapp. W.	12	7	9	
III.	Transit	Ingress W.	12	8	45	
I.	Eclipse	Reapp. W.	12	9	33	36.2
III.	Shadow	Ingress W.	12	9	38	
III.	Transit	Egress W.	12	10	38	
III.	Shadow	Egress W.	12	11	51	
II.	Occult.	Disapp.	12	21	53	
II.	Eclipse	Reapp.	13	0	53	25.9
I.	Transit	Ingress	13	4	27	
I.	Shadow	Ingress	13	4	43	
I.	Transit	Egress W.	13	6	38	
I.	Shadow	Egress W.	13	6	55	
I.	Occult.	Disapp.	14	1	35	
I.	Eclipse	Reapp.	14	4	2	22.0
II.	Transit	Ingress W.	14	16	3	
II.	Shadow	Ingress W.	14	16	39	
II.	Transit	Egress	14	18	32	
II.	Shadow	Egress	14	19	12	
I.	Transit	Ingress	14	22	53	
I.	Shadow	Ingress	14	23	11	
I.	Transit	Egress	15	1	4	
I.	Shadow	Egress	15	1	23	
I.	Occult.	Disapp.	15	20	1	
III.	Occult.	Disapp.	15	22	16	
I.	Eclipse	Reapp.	15	22	31	13.2
III.	Eclipse	Reapp.	16	1	37	26.2
II.	Occult.	Disapp. W.	16	11	0	
II.	Eclipse	Reapp. W.	16	14	11	14.5
I.	Transit	Ingress	16	17	19	
I.	Shadow	Ingress	16	17	40	
I.	Transit	Egress	16	19	30	
I.	Shadow	Egress	16	19	52	
I.	Occult.	Disapp. W.	17	14	27	
I.	Eclipse	Reapp.	17	16	59	58.7
II.	Transit	Ingress	18	5	11	
II.	Shadow	Ingress W.	18	5	58	
II.	Transit	Egress W.	18	7	41	
II.	Shadow	Egress W.	18	8	31	
I.	Transit	Ingress W.	18	11	45	
I.	Shadow	Ingress W.	18	12	9	
I.	Transit	Egress W.	18	13	56	
I.	Shadow	Egress W.	18	14	21	
I.	Occult.	Disapp. W.	19	8	53	
I.	Eclipse	Reapp. W.	19	11	28	52.2
III.	Transit	Ingress W.	19	12	0	
III.	Shadow	Ingress W.	19	13	39	
III.	Transit	Egress W.	19	13	57	
III.	Shadow	Egress W.	19	15	52	
II.	Occult.	Disapp.	20	0	7	
II.	Eclipse	Reapp.	20	3	29	4.5
I.	Transit	Ingress W.	20	6	11	
I.	Shadow	Ingress W.	20	6	38	
I.	Transit	Egress W.	20	8	22	
I.	Shadow	Egress W.	20	8	50	
I.	Occult.	Disapp.	21	3	19	
I.	Eclipse	Reapp. W.	21	5	57	40.4
II.	Transit	Ingress	21	18	19	
II.	Shadow	Ingress	21	19	17	
II.	Transit	Egress	21	20	49	
II.	Shadow	Egress	21	21	50	
I.	Transit	Ingress	22	0	37	
I.	Shadow	Ingress	22	1	7	

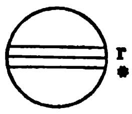
WASHINGTON MEAN TIME.

NOVEMBER.

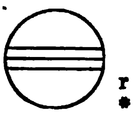
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Transit	Egress	22	2	48		III.	Shadow	Egress	26	19	53	
I.	Shadow	Egress	22	3	19		II.	Occult.	Disapp.	27	2	22	
I.	Occult.	Disapp.	22	21	46		II.	Eclipse	Reapp. W.	27	6	4	43.2
I.	Eclipse	Reapp.	23	0	26	33.7	I.	Transit	Ingress W.	27	7	55	
III.	Occult.	Disapp.	23	1	32		I.	Shadow	Ingress W.	27	8	33	
III.	Occult.	Reapp.	23	3	31		I.	Transit	Egress W.	27	10	6	
III.	Eclipse	Disapp.	23	3	42	12.2	I.	Shadow	Egress W.	27	10	45	
III.	Eclipse	Reapp.	23	5	38	53.8	I.	Occult.	Disapp.	28	5	5	
II.	Occult.	Disapp. W.	23	13	14		I.	Eclipse	Reapp. W.	28	7	53	7.0
II.	Eclipse	Reapp.	23	16	46	53.5	II.	Transit	Ingress	28	20	37	
I.	Transit	Ingress	23	19	3		II.	Shadow	Ingress	28	21	55	
I.	Shadow	Ingress	23	19	35		II.	Transit	Egress	28	23	8	
I.	Transit	Egress	23	21	14		II.	Shadow	Egress	29	0	28	
I.	Shadow	Egress	23	21	47		I.	Transit	Ingress	29	2	22	
I.	Occult.	Disapp.	24	16	12		I.	Shadow	Ingress	29	3	2	
I.	Eclipse	Reapp.	24	18	55	21.4	I.	Transit	Egress	29	4	33	
II.	Transit	Ingress W.	25	7	27		I.	Shadow	Egress	29	5	14	
II.	Shadow	Ingress W.	25	8	35		I.	Occult.	Disapp.	29	23	31	
II.	Transit	Egress W.	25	9	58		I.	Eclipse	Reapp.	30	2	22	2.4
II.	Shadow	Egress W.	25	11	8		III.	Occult.	Disapp.	30	4	52	
I.	Transit	Ingress W.	25	13	29		III.	Occult.	Reapp. W.	30	6	54	
I.	Shadow	Ingress W.	25	14	4		III.	Eclipse	Disapp. W.	30	7	44	0.9
I.	Transit	Egress W.	25	15	40		III.	Eclipse	Reapp. W.	30	9	40	25.1
I.	Shadow	Egress	25	16	16		II.	Occult.	Disapp. W.	30	15	30	
I.	Occult.	Disapp. W.	26	10	38		II.	Eclipse	Reapp.	30	19	22	33.0
I.	Eclipse	Reapp. W.	26	13	24	16.9	I.	Transit	Ingress	30	20	48	
III.	Transit	Ingress W.	26	15	18		I.	Shadow	Ingress	30	21	30	
III.	Transit	Egress	26	17	18		I.	Transit	Egress	30	22	59	
III.	Shadow	Ingress	26	17	41		I.	Shadow	Egress	30	23	42	

Phases of the Eclipses of the Satellites for an Inverting Telescope.

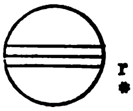
I.



III.



II.



IV. *Not Eclipsed.*

WASHINGTON MEAN TIME.

DECEMBER.

			d.	h.	m.	s.				d.	h.	m.	s.
I.	Occult.	Disapp.	1	17	57		II.	Shadow	Egress	9	16	25	
I.	Eclipse	Reapp.	1	20	50	51.8	I.	Transit	Ingress	9	17	1	
II.	Transit	Ingress W.	2	9	47		I.	Shadow	Ingress	9	17	54	
II.	Shadow	Ingress W.	2	11	15		I.	Transit	Egress	9	19	13	
II.	Transit	Egress W.	2	12	18		I.	Shadow	Egress	9	20	6	
II.	Shadow	Egress W.	2	13	47		I.	Occult.	Disapp. W.	10	14	12	
I.	Transit	Ingress W.	2	15	14		I.	Eclipse	Reapp.	10	17	15	28.9
I.	Shadow	Ingress	2	15	59		III.	Transit	Ingress	10	22	5	
I.	Transit	Egress	2	17	25		III.	Transit	Egress	11	0	13	
I.	Shadow	Egress	2	18	11		III.	Shadow	Ingress	11	1	44	
I.	Occult.	Disapp. W.	3	12	24		III.	Shadow	Egress	11	3	57	
I.	Eclipse	Reapp. W.	3	15	19	49.1	II.	Occult.	Disapp. W.	11	6	58	
III.	Transit	Ingress	3	18	39		II.	Eclipse	Reapp. W.	11	11	16	2.2
III.	Transit	Egress	3	20	43		I.	Transit	Ingress W.	11	11	28	
III.	Shadow	Ingress	3	21	42		I.	Shadow	Ingress W.	11	12	22	
III.	Shadow	Egress	3	23	55		I.	Transit	Egress W.	11	13	40	
II.	Occult.	Disapp.	4	4	39		I.	Shadow	Egress W.	11	14	34	
II.	Eclipse	Reapp. W.	4	8	40	22.5	I.	Occult.	Disapp. W.	12	8	39	
I.	Transit	Ingress W.	4	9	40		I.	Eclipse	Reapp. W.	12	11	44	22.6
I.	Shadow	Ingress W.	4	10	27		II.	Transit	Ingress	13	1	19	
I.	Transit	Egress W.	4	11	51		II.	Shadow	Ingress	13	3	12	
I.	Shadow	Egress W.	4	12	39		II.	Transit	Egress	13	3	51	
I.	Occult.	Disapp. W.	5	6	51		II.	Shadow	Egress W.	13	5	44	
I.	Eclipse	Reapp. W.	5	9	48	41.3	I.	Transit	Ingress W.	13	5	55	
II.	Transit	Ingress	5	22	57		I.	Shadow	Ingress W.	13	6	51	
II.	Shadow	Ingress	6	0	33		I.	Transit	Egress W.	13	8	7	
II.	Transit	Egress	6	1	28		I.	Shadow	Egress W.	13	9	3	
II.	Shadow	Egress	6	3	6		I.	Occult.	Disapp.	14	3	6	
I.	Transit	Ingress	6	4	7		I.	Eclipse	Reapp. W.	14	6	13	21.9
I.	Shadow	Ingress	6	4	56		III.	Occult.	Disapp. W.	14	11	43	
I.	Transit	Egress W.	6	6	19		III.	Occult.	Reapp. W.	14	13	52	
I.	Shadow	Egress W.	6	7	8		III.	Eclipse	Disapp.	14	15	47	35.1
I.	Occult.	Disapp.	7	1	18		III.	Eclipse	Reapp.	14	17	43	31.1
I.	Eclipse	Reapp.	7	4	17	38.8	II.	Occult.	Disapp.	14	20	8	
III.	Occult.	Disapp. W.	7	8	15		I.	Transit	Ingress	15	0	22	
III.	Occult.	Reapp. W.	7	10	21		II.	Eclipse	Reapp.	15	0	33	53.1
III.	Eclipse	Disapp. W.	7	11	45	43.2	I.	Shadow	Ingress	15	1	20	
III.	Eclipse	Reapp. W.	7	13	41	52.2	I.	Transit	Egress	15	2	34	
II.	Occult.	Disapp.	7	17	48		I.	Shadow	Egress	15	3	32	
II.	Eclipse	Reapp.	7	21	58	12.9	I.	Occult.	Disapp.	15	21	33	
I.	Transit	Ingress	7	22	34		I.	Eclipse	Reapp.	16	0	42	14.3
I.	Shadow	Ingress	7	23	25		II.	Transit	Ingress W.	16	14	31	
I.	Transit	Egress	8	0	46		II.	Shadow	Ingress	16	16	32	
I.	Shadow	Egress	8	1	37		II.	Transit	Egress	16	17	4	
I.	Occult.	Disapp.	8	19	45		I.	Transit	Ingress	16	18	49	
I.	Eclipse	Reapp.	8	22	46	29.7	II.	Shadow	Egress	16	19	4	
II.	Transit	Ingress W.	9	12	8		I.	Shadow	Ingress	16	19	49	
II.	Shadow	Ingress W.	9	13	53		I.	Transit	Egress	16	21	1	
II.	Transit	Egress W.	9	14	40		I.	Shadow	Egress	16	22	1	

WASHINGTON MEAN TIME.

DECEMBER.

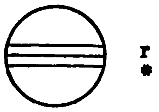
			d.	h.	m.	s.				d.	h.	m.	s.
I.	Occult.	Disapp.	17	16	0		I.	Eclipse	Reapp.	24	21	7	6.5
I.	Eclipse	Reapp.	17	19	11	15.0	III.	Transit	Ingress	25	5	10	
III.	Transit	Ingress	18	1	35		III.	Transit	Egress W.	25	7	25	
III.	Transit	Egress	18	3	46		III.	Shadow	Ingress W.	25	9	48	
III.	Shadow	Ingress W.	18	5	46		II.	Occult.	Disapp. W.	25	11	43	
III.	Shadow	Egress W.	18	7	58		III.	Shadow	Egress W.	25	12	0	
II.	Occult.	Disapp. W.	18	9	19		I.	Transit	Ingress	25	15	4	
I.	Transit	Ingress W.	18	13	16		I.	Shadow	Ingress	25	16	13	
II.	Eclipse	Reapp. W.	18	13	51	42.8	II.	Eclipse	Reapp.	25	16	27	24.4
I.	Shadow	Ingress W.	18	14	18		I.	Transit	Egress	25	17	16	
I.	Transit	Egress	18	15	28		I.	Shadow	Egress	25	18	25	
I.	Shadow	Egress	18	16	30		I.	Occult.	Disapp. W.	26	12	17	
I.	Occult.	Disapp. W.	19	10	27		I.	Eclipse	Reapp.	26	15	36	2.6
I.	Eclipse	Reapp. W.	19	13	40	10.1	II.	Transit	Ingress W.	27	6	11	
II.	Transit	Ingress	20	3	43		II.	Shadow	Ingress W.	27	8	29	
II.	Shadow	Ingress W.	20	5	50		II.	Transit	Egress W.	27	8	44	
II.	Transit	Egress W.	20	6	16		I.	Transit	Ingress W.	27	9	32	
I.	Transit	Ingress W.	20	7	43		I.	Shadow	Ingress W.	27	10	42	
II.	Shadow	Egress W.	20	8	22		II.	Shadow	Egress W.	27	11	1	
I.	Shadow	Ingress W.	20	8	47		I.	Transit	Egress W.	27	11	44	
I.	Transit	Egress W.	20	9	55		I.	Shadow	Egress W.	27	12	54	
I.	Shadow	Egress W.	20	10	59		I.	Occult.	Disapp. W.	28	6	44	
I.	Occult.	Disapp.	21	4	54		I.	Eclipse	Reapp. W.	28	10	5	4.5
I.	Eclipse	Reapp. W.	21	8	9	10.8	III.	Occult.	Disapp.	28	18	54	
III.	Occult.	Disapp.	21	15	16		III.	Occult.	Reapp.	28	21	11	
III.	Occult.	Reapp.	21	17	29		III.	Eclipse	Disapp.	28	23	52	24.3
III.	Eclipse	Disapp.	21	19	50	4.7	II.	Occult.	Disapp.	29	0	56	
III.	Eclipse	Reapp.	21	21	45	49.7	III.	Eclipse	Reapp.	29	1	48	0.5
II.	Occult.	Disapp.	21	22	31		I.	Transit	Ingress	29	4	0	
I.	Transit	Ingress	22	2	10		I.	Shadow	Ingress	29	5	11	
II.	Eclipse	Reapp.	22	3	9	34.1	II.	Eclipse	Reapp. W.	29	5	45	16.4
I.	Shadow	Ingress	22	3	15		I.	Transit	Egress W.	29	6	12	
I.	Transit	Egress	22	4	22		I.	Shadow	Egress W.	29	7	23	
I.	Shadow	Egress W.	22	5	27		I.	Occult.	Disapp.	30	1	12	
I.	Occult.	Disapp.	22	23	22		I.	Eclipse	Reapp.	30	4	33	59.1
I.	Eclipse	Reapp.	23	2	38	4.6	II.	Transit	Ingress	30	19	25	
II.	Transit	Ingress	23	16	57		II.	Shadow	Ingress	30	21	49	
II.	Shadow	Ingress	23	19	10		II.	Transit	Egress	30	22	0	
II.	Transit	Egress	23	19	31		I.	Transit	Ingress	30	22	28	
I.	Transit	Ingress	23	20	37		I.	Shadow	Ingress	30	23	40	
II.	Shadow	Egress	23	21	42		II.	Shadow	Egress	31	0	21	
I.	Shadow	Ingress	23	21	44		I.	Transit	Egress	31	0	40	
I.	Transit	Egress	23	22	49		I.	Shadow	Egress	31	1	52	
I.	Shadow	Egress	23	23	56		I.	Occult.	Disapp.	31	19	40	
I.	Occult.	Disapp.	24	17	49		I.	Eclipse	Reapp.	31	23	3	2.0

WASHINGTON MEAN TIME.

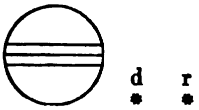
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

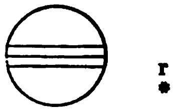
I.



III.



II.



IV. *Not Eclipsed.*

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

	h. m.		h. m.		h. m.		h. m.
Jan. 1	6 14.1	May 19	9 37.3	Aug. 3	12 45.1	Oct. 18	14 11.4
3	0 43.6	21	4 7.5	5	7 13.5	20	8 37.4
4	19 13.1	22	22 37.7	7	1 41.9	22	3 3.3
6	13 42.7	24	17 7.8	8	20 10.3	23	21 29.2
8	8 12.3	26	11 37.9	10	14 38.6	25	15 55.1
10	2 41.9	28	6 8.0	12	9 6.8	27	10 21.0
11	21 11.6	30	0 38.1	14	3 35.0	29	4 46.9
13	15 41.3	31	19 8.1	15	22 3.1	30	23 12.8
15	10 11.1	June 2	13 38.1	17	16 31.1	Nov. 1	17 38.6
17	4 40.9	4	8 8.1	19	10 59.1	3	12 4.5
18	23 10.7	6	2 38.0	21	5 27.0	5	6 30.4
20	17 40.6	7	21 7.9	22	23 54.8	7	0 56.3
22	12 10.5	9	15 37.8	24	18 22.6	8	19 22.2
24	6 40.5	11	10 7.6	26	12 50.3	10	13 48.2
26	1 10.5	13	4 37.5	28	7 17.9	12	8 14.2
27	19 40.6	14	23 7.3	30	1 45.5	14	2 40.3
29	14 10.7	16	17 37.1	31	20 13.0	15	21 6.4
31	8 40.8	18	12 6.9	Sept. 2	14 40.4	17	15 32.5
Feb. 2	3 10.9	20	6 36.6	4	9 7.8	19	9 58.7
3	21 41.1	22	1 6.3	6	3 35.1	21	4 24.9
5	16 11.3	23	19 35.9	7	22 2.3	22	22 51.2
7	10 41.6	25	14 5.5	9	16 29.4	24	17 17.5
9	5 11.9	27	8 35.1	11	10 56.5	26	11 43.9
10	23 42.1	29	3 4.6	13	5 23.5	28	6 10.3
12	18 12.4	30	21 34.1	14	23 50.4	30	0 36.8
14	12 42.7	July 2	16 3.5	16	18 17.3	Dec. 1	19 3.3
16	7 13.0	4	10 32.9	18	12 44.1	3	13 29.9
18	1 43.3	6	5 2.3	20	7 10.8	5	7 56.6
19	20 13.6	7	23 31.6	22	1 37.5	7	2 23.4
21	14 43.9	9	18 0.8	23	20 4.1	8	20 50.2
23	9 14.2	11	12 30.0	25	14 30.7	10	15 17.1
25	3 44.6	13	6 59.2	27	8 57.2	12	9 44.1
26	22 14.9	15	1 28.3	29	3 23.6	14	4 11.2
28	16 45.2	16	19 57.4	30	21 50.0	15	22 38.4
March 2	11 15.5	18	14 26.4	Oct. 2	16 16.3	17	17 5.6
4	5 45.8	20	8 55.3	4	10 42.6	19	11 32.9
6	0 16.1	22	3 24.2	6	5 8.9	21	6 0.3
7	18 46.4	23	21 53.1	7	23 35.1	23	0 27.8
9	13 16.7	25	16 21.9	9	18 1.2	24	18 55.3
11	7 47.0	27	10 50.7	11	12 27.3	26	13 22.9
May 12	7 36.5	29	5 19.4	13	6 53.4	28	7 50.6
14	2 6.7	30	23 48.0	15	1 19.4	30	2 18.4
15	20 36.9	Aug. 1	18 16.6	16	19 45.4	31	20 46.2
17	15 7.1						

SATELLITE II.

	h. m.		h. m.		h. m.		h. m.
Jan. 4	1 55.9	Jan. 21	20 41.4	Feb. 8	15 37.1	Feb. 26	10 39.6
7	15 16.2	25	10 4.0	12	5 1.0	March 2	0 5.0
11	4 36.8	28	23 26.6	15	18 25.5	5	13 30.3
14	17 58.0	Feb. 1	12 50.0	19	7 49.9	9	2 56.0
18	7 19.5	5	2 13.7	22	21 14.8	May 15	18 14.8

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

		h. m.			h. m.			h. m.			h. m.
May	19	7 41.3	July	15	6 4.6	Sept.	10	2 38.4	Nov.	5	20 54.1
	22	21 6.5		18	19 25.3		13	15 50.1		9	10 0.5
	26	10 32.7		22	8 46.3		17	5 1.7		12	23 7.6
	29	23 57.6		25	22 5.9		20	18 12.4		16	12 14.6
June	2	13 23.2		29	11 26.2		24	7 22.7		20	1 21.8
	6	2 47.7	Aug.	2	0 44.9		27	20 32.3		23	14 29.4
	9	16 13.0		5	14 4.1	Oct.	1	9 41.6		27	3 37.3
	13	5 37.1		9	3 21.8		4	22 50.1		30	16 45.9
	16	19 2.0		12	16 39.8		8	11 58.7	Dec.	4	5 54.7
	20	8 25.5		16	5 56.3		12	1 6.4		7	19 4.2
	23	21 49.9		19	19 13.0		15	14 13.9		11	8 14.1
	27	11 12.8		23	8 28.5		19	3 21.0		14	21 24.6
July	1	0 36.2		26	21 44.0		22	16 27.8		18	10 35.5
	4	13 58.4		30	10 58.2		26	5 34.4		21	23 47.2
	8	3 21.2	Sept.	3	0 12.4		29	18 41.2		25	12 59.6
	11	16 42.7		6	13 25.4	Nov.	2	7 47.5		29	2 12.5

SATELLITE III.

		h. m.			h. m.			h. m.			h. m.
Jan.	4	10 31.8	May	20	23 5.4	Aug.	7	22 5.5	Oct.	25	13 26.5
	11	14 44.2		28	3 32.6		15	2 2.5	Nov.	1	16 41.7
	18	19 0.4	June	4	7 58.7		22	5 55.1		8	19 56.6
	25	23 19.2		11	12 22.8		29	9 42.8		15	23 13.4
Feb.	2	3 40.7		18	16 45.9	Sept.	5	13 25.9		23	2 31.7
	9	8 4.0		25	21 5.9		12	17 4.3		30	5 53.0
	16	12 29.3	July	3	1 23.4		19	20 37.8	Dec.	7	9 18.1
	23	16 56.7		10	5 38.2		27	0 7.5		14	12 47.8
March	2	21 25.5		17	9 49.8	Oct.	4	3 32.3		21	16 22.8
	10	1 56.0		24	13 58.5		11	6 53.3		28	20 2.7
May	13	18 37.5		31	18 3.6		18	10 10.8			

SATELLITE IV.

		h. m.			h. m.			h. m.			h. m.
Jan.	6	9 1.7	Feb.	9	0 37.6	Feb.	25	21 10.7	March	14	18 1.0
	23	4 30.9									

Factors by which x' and y' in the following Table must be multiplied to obtain the coördinates x and y for any time.

p = the inclination of the northern Semiminor Axis of the apparent ellipse to the circle of Declination ; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the I^{st}, of every second eclipse for the II^{d}, and of every eclipse for the III^{d} and IV^{th} Satellites.

SATELLITE I.

Date, 1857.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.
			° ′	″	″
Jan. 1	1.035	+0.660	—25 23.0	+40	+4
8	1.013	0.647	25 21.1	38	4
15	0.993	0.636	25 18.5	37	4
22	0.974	0.627	25 15.1	35	4
29	0.956	0.621	25 10.8	33	4
Feb. 5	0.941	+0.616	—25 5.4	+31	+4
12	0.927	0.615	24 59.0	30	4
19	0.915	0.615	24 51.4	38	4
26	0.904	0.616	24 42.6	26	4
March 6	0.895	0.619	24 32.5	25	4
13	0.887	+0.623	—24 20.9	+23	+4
May 12	0.885	0.709	21 53.6	—23	5
19	0.892	0.724	21 31.8	25	5
26	0.900	0.740	21 9.6	26	5
June 2	0.910	0.759	20 47.1	28	5
9	0.921	+0.779	—20 24.5	—29	+5
16	0.934	0.800	20 2.0	31	5
23	0.948	0.822	19 40.0	33	5
30	0.964	0.846	19 18.6	34	5
July 7	0.982	0.871	18 58.2	36	5
15	1.001	+0.897	—18 39.0	—38	+6
22	1.021	0.925	18 21.4	39	6
29	1.042	+0.955	—18 5.7	—40	+6
Aug. 5	1.065	+0.985	—17 52.1	—41	+ 6
12	1.089	1.016	17 40.9	42	6
19	1.114	1.048	17 32.5	42	6
26	1.140	1.081	17 27.0	43	7
Sept. 2	1.165	1.113	17 24.7	43	7
9	1.190	+1.144	—17 25.4	—42	+ 7
16	1.214	1.173	17 29.6	40	7
23	1.237	1.200	17 36·9	39	7
30	1.258	1.222	17 47.0	37	7
Oct. 7	1.276	1.239	17 59.5	35	8
15	1.289	+1.251	—18 14.1	—32	+ 8
22	1.298	1.256	18 30.2	29	8
29	1.303	1.253	18 47.0	—25	8
Nov. 5	1.303	1.243	19 3.9	+24	8
12	1.298	1.227	19 20.2	28	8
19	1.288	+1.204	—19 35.4	+31	+ 7
26	1.273	1.177	19 48.8	34	7
Dec. 3	1.255	1.145	20 0.2	37	7
10	1.234	1.111	20 9.2	39	7
17	1.210	1.076	20 15.7	41	7
24	1.184	+1.039	—20 19.4	+42	+ 6
31	1.157	+1.002	—20 20.4	+42	+ 6

SATELLITE II.

Date, 1857.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x'.	Factor for y'.	p.	x.	y.
			° ′	″	″
Jan. 4	1.027	+0.446	—25 32.1	+51	+5
11	1.005	0.439	25 30 6	49	5
18	0.985	0.434	25 28.3	47	5
25	0.967	0.431	25 25.2	45	5
Feb. 1	0.950	0.429	25 21.2	42	5
8	0.935	+0.429	—25 16.2	+39	+5
15	0.921	0.431	25 10.0	36	5
22	0.910	0.434	25 2.6	34	5
March 2	0.900	0 439	24 53.9	31	5
9	0.892	0.445	24 43.9	+28	5
May 15	0.888	+0.551	—22 6.4	—28	+7
22	0.896	0.568	21 44.8	31	7
29	0.905	0.585	21 22.8	34	7
June 6	0.916	0.603	21 0.7	37	7
13	0.928	0.623	20 38.5	39	7
20	0.942	+0.644	—20 16.6	—42	+7
27	0.957	0.666	19 55.1	45	8
July 4	0.973	0.688	19 34.4	47	8
11	0.991	0.712	19 14.8	49	8
18	1.011	0.737	18 56.6	51	8
25	1.032	+0.763	—18 40.1	—53	+9
Aug. 2	1.055	+0.790	—18 25.6	—55	+9
Aug. 9	1.078	+0.818	—18 13.4	—56	+ 9
16	1.103	0.846	18 3.8	57	9
23	1.128	0.874	17 57.1	57	10
30	1.154	0.902	17 53.3	56	10
Sept. 6	1.180	0.929	17 52.8	55	11
13	1.205	+0.954	—17 55.5	—53	+11
20	1.228	0.977	17 1.4	50	11
27	1.250	0.997	18 10.2	47	12
Oct. 4	1.269	1.012	18 21.8	43	12
12	1.284	1.023	18 35.6	38	12
19	1.295	+1.028	—18 51.0	—33	+12
26	1.302	1.026	19 7.5	26	12
Nov. 2	1.304	1.018	19 24.3	—17	12
9	1.300	1.004	19 40.8	+25	12
16	1.292	9.986	19 56.4	32	12
23	1.279	+0.962	—20 10.5	+37	+11
30	1.263	0.935	20 22.7	41	11
Dec. 7	1.242	0.906	20 32.7	45	11
14	1.219	0.876	20 40.1	48	10
21	1.194	0.846	20 44.9	50	10
29	1.168	+0.816	—20 47.0	+52	+10

SATELLITE III.

Date, 1857.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
				Disappearance.		Reappearance.	
	Factor for x'.	Factor for y'.	p.	x.	y	x.	y.
Jan. 4	1.002	+0.565	—25° 21′.7	+41″	+10″	+67″	+10″
11	0.981	0.554	25 19.7	39	10	64	10
18	0.961	0.546	25 17.0	36	10	60	10
25	0.943	0.540	25 13.5	33	9	56	9
Feb. 2	0.927	0.536	25 8.9	29	9	52	9
9	0.912	+0.534	—25 3.2	+26	+ 9	+44	+ 9
16	0.899	0.534	24 56.4	22	9	44	9
23	0.888	0.535	24 48.3	+18	9	40	9
March 2	0.878	0.538	24 39.0	. .	. .	35	9
10	0.870	0.542	24 28.3	. .	. .	+30	9
May 13	0.866	+0.634	—21 54.8	—29	+11	. .	. .
20	0.873	0.650	21 32.8	34	11	. .	. .
28	0.882	0.667	21 10.5	38	11	—18	+11
June 4	0.892	0.685	20 48.0	42	12	22	11
11	0.904	0.704	20 25.4	46	12	26	12
18	0.917	+0.725	—20 2.9	—50	+12	—30	+12
25	0.931	0.747	19 41.0	54	13	34	13
July 3	0.947	0.770	19 19.8	58	13	37	13
10	0.965	0.795	18 59.7	61	14	40	14
17	0.985	0.821	18 41.0	64	14	43	14
24	1.005	+0.848	—18 23.9	—66	+14	—45	+14
31	1.027	0.877	18 8.7	68	15	47	15
Aug. 7	1.050	0.906	17 55.9	70	15	49	15
15	1.074	0.937	17 45.7	71	16	49	16
22	1.098	0.967	17 38.3	71	16	49	17
29	1.123	+0.996	—17 34.1	—70	+16	—48	+17
Sept. 5	1.149	1.025	17 33.2	69	17	46	18
12	1.174	1.053	17 35.5	66	17	43	18
19	1.198	1.079	17 40.9	62	18	38	19
27	1.220	1.102	17 49.4	57	18	32	19
Oct. 4	1.238	+1.120	—18 0.8	—50	+18	—25	+19
11	1.253	1.133	18 14.5	42	19	. .	. .
18	1.265	1.140	18 29.7	33	20	. .	. .
25	1.272	1.140	18 46.2	—23	20	. .	. .
Nov. 1	1.275	1.133	19 3.1	. .	. .	. .	. .
8	1.272	+1.120	—19 19.8	. .	. .	+20	+19
15	1.264	1.101	19 35.6	. .	. .	31	19
23	1.251	1.076	19 49.0	. .	. .	40	18
30	1.235	1.047	20 2.2	+23	+18	48	18
Dec. 7	1.215	1.016	20 12.3	30	17	54	17
14	1.192	+0.983	—20 19.9	+36	+17	+59	+17
21	1.168	0.949	20 24.9	41	16	63	16
28	1.142	+0.915	—20 27.1	+44	+16	+66	+16

SATELLITE IV.

Date, 1857.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x′.	Factor for y′.	p.	Disappearance.		Reappearance.	
				x.	y.	x.	y.
			° ′				
Jan. 6	1.020	+0.464	−25 17.7				
23	0.972	0.448	25 11.7				
Feb. 9	0.934	0.442	25 0.7				
25	0.905	0.444	24 43.4				
March 14	0.886	+0.453	−24 18.9				

SATELLITE I.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEOCENTRIC SUPERIOR CONJUNCTION.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+109.1	− 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	− 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.2	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	− 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.2	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	− 4.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE I.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 16 0	+ 76.4	— 4.7	1 1 40	— 66.6	— 5.2	1 11 0	— 97.6	+ 3.0
0 16 20	72.5	5.0	1 2 0	70.8	5.0	1 11 20	95.1	3.3
0 16 40	68.4	5.2	1 2 20	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 20	59.6	5.5	1 3 0	82.2	4.4	1 12 20	86.1	4.1
0 17 40	+ 55.0	— 5.7	1 3 20	— 85.6	— 4.1	1 12 40	— 82.7	+ 4.3
0 18 0	50.3	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 20	45.5	6.0	1 4 0	91.9	3.6	1 13 20	75.3	4.8
0 18 40	40.5	6.1	1 4 20	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 20	+ 30.4	— 6.4	1 5 0	— 99.6	— 2.7	1 14 20	— 62.8	+ 5.4
0 19 40	25.2	6.4	1 5 20	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 20	14.6	6.6	1 6 0	105.1	1.8	1 15 20	49.0	5.9
0 20 40	9.2	6.6	1 6 20	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 3.8	— 6.6	1 6 40	—107.5	— 1.2	1 16 0	— 39.1	+ 6.2
0 21 20	— 1.5	6.6	1 7 0	108.3	0.8	1 16 20	34.0	6.3
0 21 40	6.9	6.6	1 7 20	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	— 0.2	1 17 0	23.7	6.5
0 22 20	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 20	18.4	6.5
0 22 40	— 22.9	— 6.5	1 8 20	—108.9	+ 0.5	1 17 40	— 13.0	+ 6.6
0 23 0	28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 20	33.3	6.3	1 9 0	107.6	1.1	1 18 20	— 2.3	6.6
0 23 40	38.4	6.2	1 9 20	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 20	— 48.3	— 5.9	1 10 0	—103.8	+ 2.1	1 19 20	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 20	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	— 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 20	— 62.2	— 5.4						

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+12.2	0 10 40	+122.9	+ 8.6	0 21 20	+173.8	— 0.0
0 0 40	8.5	12.2	0 11 20	128.8	8.2	0 22 0	173.6	0.6
0 1 20	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.2
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 20	171.8	1.8
0 2 40	33.9	12.0	0 13 20	144.5	6.8	1 0 0	170.4	2.4
0 3 20	+ 42.2	+11.8	0 14 0	+149.0	+ 6.3	1 0 40	+168.5	— 3.0
0 4 0	50.5	11.7	0 14 40	153.2	5.7	1 1 20	166.2	3.5
0 4 40	58.6	11.5	0 15 20	157.0	5.2	1 2 0	163.5	4.1
0 5 20	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 20	157.0	5.2
0 6 40	+ 81.9	+10.8	0 17 20	+166.3	+ 3.5	1 4 0	+153.2	— 5.8
0 7 20	89.4	10.5	0 18 0	168.6	3.0	1 4 40	149.0	6.3
0 8 0	96.6	10.1	0 18 40	170.5	2.4	1 5 20	144.4	6.8
0 8 40	103.6	9.8	0 19 20	171.9	1.8	1 6 0	139.5	7.3
0 9 20	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+116.7	+ 9.0	0 20 40	+173.6	+ 0.6	1 7 20	+128.6	— 8.2

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
1 8 0	+122.7	— 8.6	2 3 20	—103.7	— 9.8	2 22 0	—156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	—10.5	2 6 40	—134.5	— 7.7	3 1 20	—134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	—11.7	2 10 0	—157.1	— 5.2	3 4 40	—103.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.8	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	—12.2	2 13 20	—170.4	— 2.3	3 8 0	— 66.1	+11.3
1 18 40	— 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	— 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	— 34.1	—12.0	2 16 40	—173.6	+ 0.6	3 11 20	— 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	— 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.2
2 0 40	— 74.5	—11.0	2 20 0	—166.2	+ 3.5	3 14 40	+ 17.5	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	—160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	— 96.7	—10.1						

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	— 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.2	1 1 20	221.4	10.5	1 22 40	274.7	2.3
0 5 20	53.6	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.2
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	— 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.3	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	— 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	—11.5

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

t	x′	y′	t	x′	y′	t	x′	y′
d. h. m.	″	″	d. h. m.	″	″	d. h. m.	″	″
2 16 0	+199.5	—12.1	4 6 40	—158.4	—14.3	5 20 0	—255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.3
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	—14.8	4 13 20	—208.6	—11.5	6 2 40	—221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	—16.6	4 20 0	—246.5	— 8.0	6 9 20	—174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	—17.4	5 2 40	—269.8	— 4.0	6 16 0	—117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	— 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.3	17.4	5 6 40	276.2	1.5	6 20 0	79.8	16.7
3 17 20	33.7	17.3	5 8 0	277.0	— 0.6	6 21 20	66.8	16.9
3 18 40	— 47.1	—17.2	5 9 20	—277.2	+ 0.2	6 22 40	— 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	— 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	—111.5	—16.0	5 16 0	—268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	135.7	15.2	5 18 40	—260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	—147.2	—14.8						

SATELLITE IV.

t	x′	y′	t	x′	y′	t	x′	y′
d. h.	″	″	d. h.	″	″	d. h.	″	″
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	— 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.2	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	— 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	—13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	—20.6

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

t		x′	y′	t		x′	y′	t		x′	y′
d.	h.	″	″	d.	h.	″	″	d.	h.	″	″
6	0	+379.2	—21.9	9	18	—240.1	—30.3	13	12	—457.6	+12.0
6	3	364.4	23.1	9	21	259.7	29.5	13	15	449.3	13.5
6	6	348.8	24.3	10	0	278.7	28.6	13	18	440.0	15.0
6	9	332.5	25.5	10	3	297.2	27.6	13	21	429.7	16.4
6	12	315.4	26.6	10	6	315.0	26.6	14	0	418.5	17.8
6	15	+297.6	—27.6	10	9	—332.1	—25.5	14	3	—406.3	+19.2
6	18	279.2	28.5	10	12	348.4	24.4	14	6	393.2	20.6
6	21	260.2	29.4	10	15	363.9	23.2	14	9	379.3	21.9
7	0	240.6	30.3	10	18	378.7	21.9	14	12	364.6	23.1
7	3	220.5	31.1	10	21	392.7	20.6	14	15	349.1	24.3
7	6	+199.9	—31.8	11	0	—405.8	—19.3	14	18	—332.8	+25.4
7	9	178.8	32.4	11	3	418.0	17.9	14	21	315.7	26.5
7	12	157.4	33.0	11	6	429.3	16.5	15	0	298.0	27.5
7	15	135.6	33.5	11	9	439.6	15.0	15	3	279.6	28.5
7	18	113.5	33.9	11	12	449.0	13.5	15	6	260.5	29.4
7	21	+ 91.2	—34.2	11	15	—457.4	—12.0	15	9	—240.9	+30.3
8	0	68.7	34.5	11	18	464.8	10.5	15	12	220.8	31.1
8	3	46.0	34.7	11	21	471.2	8.9	15	15	200.2	31.8
8	6	23.2	34.8	12	0	476.5	7.3	15	18	179.2	32.4
8	9	+ 0.3	34.8	12	3	480.8	5.7	15	21	157.7	33.0
8	12	— 22.5	—34.8	12	6	—484.0	— 4.1	16	0	—135.9	+33.5
8	15	45.3	34.7	12	9	486.2	2.5	16	3	113.8	33.9
8	18	68.0	34.5	12	12	487.3	— 0.8	16	6	91.5	34.2
8	21	90.5	34.2	12	15	487.3	+ 0.8	16	9	69.0	34.5
9	0	112.9	33.9	12	18	486.3	2.4	16	12	46.3	34.7
9	3	—135.0	—33.5	12	21	—484.2	+ 4.0	16	15	— 23.5	+34.8
9	6	156.8	33.0	13	0	480.9	5.7	16	18	— 0.6	34.8
9	9	178.2	32.4	13	3	476.6	7.3	16	21	+ 22.2	34.8
9	12	199.3	31.8	13	6	471.3	8.9	17	0	+ 45.0	+34.7
9	15	—220.0	—31.1	13	9	—465.0	+10.5				

THE APPARENT ELEMENTS OF SATURN'S RING.

Sidereal Date)h.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semiminor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun • above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on Equator.	*u′* Ecliptic.
0	46″.68	19″.84	—7° 12′.2	—25° 9′.6	—25° 14′.1	159° 7′.8	115° 45′.2
20	46.31	19.95	7 7.6	25 32.6	25 6.2	157 26.3	114 3.9
40	45.34	19.74	7 4.6	25 48.4	24 58.2	156 4.3	112 42.0
60	43.94	19.23	7 3.0	25 57.8	24 50.3	155 23.5	112 1.3
80	42.35	18.56	7 3.0	25 59.9	24 42.3	155 30.7	112 8.6
100	40.89	17.86	7 6.0	25 53.5	24 34.0	156 22.7	113 0.6
120	39.59	17.14	7 10.7	25 39.3	24 25.4	158 0.0	114 38.0
140	38.53	16.45	7 16.2	25 17.6	24 16.4	160 6.7	116 45.8
160	37.74	15.84	7 22.3	24 49.0	24 7.1	162 35.8	118 14.0
180	37.37	15.35	7 27.2	24 14.5	23 57.6	165 16.8	121 55.0
200	37.35	14.95	7 31.5	23 36.0	23 47.8	168 1.4	124 45.7
220	37.70	14.67	7 34.1	22 54.4	23 37.8	170 40.5	127 18.9
240	38.37	14.52	7 36.0	22 14.6	23 27.6	173 5.3	129 43.8
260	39.41	14.55	7 36.6	21 40.8	23 17.1	175 7.1	131 45.6
280	40.69	14.75	7 36.9	21 15.2	23 6.4	176 37.3	133 15.9
300	42.14	15.13	7 36.9	21 1.0	22 55.4	177 29.4	134 8.1
320	43.74	15.67	7 36.9	20 59.1	22 44.3	177 38.5	134 17.3
340	44.90	16.34	7 37.0	21 10.7	22 32.9	177 4.0	133 42.9
360	46.12	17.01	7 37.3	21 38.4	22 21.4	175 49.3	132 28.3
.365	46.43	17.18	—7 37.4	—21 46.4	—22 18.5	175 30.1	132 9.2

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring	= 0.8801	log. Factor	= 9.9445
The outer ellipse of the inner Ring	= 0.8599	"	= 9.9344
The inner ellipse of the inner Ring	= 0.6650	"	= 9.8228
The inner ellipse of Bond's dusky Ring	= 0.5486	"	= 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1857.	Venus.	Mars.	1857.	Venus.	Mars.
January 15	0.700	0.956	July 15	0.474	0.996
February 15	0.576	0.972	August 15	0.628	0.988
March 15	0.421	0.984	September 15	0.746	0.975
April 15	0.165	0.994	October 15	0.836	0.959
May 15	0.010	0.999	November 15	0.906	0.939
June 15	0.263	1.000	December 15	0.954	0.920

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d.	h.	m.		°	′
Jan.	1	10	18	☉ in Perigee.		
	2	0	8	☌ ♃ ☾ . . . . . ♃ —	0	35
	5	13	24	☌ ♅ ☾ . . . . . ♅ —	3	45
	8	21	45	☌ ♄ ☾ . . . . . ♄ —	5	35
	15	0	21	☿ greatest elong. E.	18	46
	16	16	9	☿ in ☊		
	21	4	44	☿ stationary.		
	21	5	54	☿ in Perihelion.		
	24	6	40	☌ ♀ ♆ . . . . . ♀ +	0	26
	25	20	49	☌ ☿ ☾ . . . . . ☿ +	7	1
	27	16	42	☌ ♂ ☾ . . . . . ♂ +	1	38
	28	3	27	♅ stationary.		
	28	6	49	☌ ♆ ☾ . . . . . ♆ +	0	38
	28	15	9	☌ ♀ ☾ . . . . . ♀ +	0	54
	29	13	32	☌ ♃ ☾ . . . . . ♃ —	1	11
	30	14	38	☌ ☿ ☉ Inf.		
	31	13	58	☿ greatest Hel. Lat. N.		
Feb.	1	18	48	☌ ♅ ☾ . . . . . ♅ —	3	59
	3	7	22	♀ in ☊		
	5	2	2	☌ ♄ ☾ . . . . . ♄ —	5	37
	7	13	44	☌ ♂ ♆ . . . . . ♂ +	0	23
	9	3	55	□ ♅ ☉		
	11	10	41	☿ stationary.		
	11	18	28	☌ ♀ ♃ . . . . . ♀ +	2	1
	21	15	41	☌ ☿ ☾ . . . . . ☿ +	5	8
	24	1	31	☿ in ☋		
	24	17	13	☌ ♆ ☾ . . . . . ♆ +	0	27
	25	0	18	☿ greatest elong. W.	26	57
	25	15	46	☌ ♂ ☾ . . . . . ♂ —	0	17
	26	7	2	☌ ♃ ☾ . . . . . ♃ —	1	50
	26	21	52	♀ greatest elong. E.	46	24
	27	4	18	☌ ♀ ☾ . . . . . ♀ +	0	28
March	1	1	19	☌ ♅ ☾ . . . . . ♅ —	4	11
	4	6	9	☌ ♄ ☾ . . . . . ♄ —	5	41
	6	5	30	☿ in Aphelion.		
	8	4	57	♄ stationary.		
	8	18	21	♀ in Perihelion.		
	14	9	8	☌ ♂ ♃ . . . . . ♂ +	0	48
	19	22	37	☉ enters ♈		
	24	2	20	☌ ☿ ☾ . . . . . ☿ —	0	44
	24	5	36	☌ ♆ ☾ . . . . . ♆ +	0	21
	25			☉ Eclipsed.		
	25	5	37	☌ ☿ ♆ . . . . . ☿ —	1	16
	26	3	40	☌ ♃ ☾ . . . . . ♃ —	2	27
	26	14	3	☌ ♂ ☾ . . . . . ♂ —	2	8
	26	15	28	☿ greatest Hel. Lat. S.		
	27	15	24	□ ♄ ☉		
	28	5	0	☌ ♀ ☾ . . . . . ♀ +	1	23
	28	10	51	☌ ♅ ☾ . . . . . ♅ —	4	17
	30	19	21	♀ greatest Hel. Lat. N.		
	31	12	47	☌ ♄ ☾ . . . . . ♄ —	5	40
April	4	7	27	☌ ♀ ♅ . . . . . ♀ +	5	59
	10	4	25	☌ ☿ ☉ Sup.		
	10	18	58	☌ ☿ ♃ . . . . . ☿ +	0	26
	11	11	20	☌ ♃ ☉		
	14	15	27	☿ in ☊		
	14	20	18	♂ in ☊		
	18	9	5	♀ stationary.		
	19	5	9	☿ in Perihelion.		
	20	17	54	☌ ♆ ☾ . . . . . ♆ +	0	11
	21	8	55	☌ ☿ ♂ . . . . . ☿ +	1	11
	23	1	37	☌ ♃ ☾ . . . . . ♃ —	3	4
	24	10	41	☌ ♂ ☾ . . . . . ♂ —	3	29
	24	17	5	☌ ☿ ☾ . . . . . ☿ —	2	3
	24	23	10	☌ ♅ ☾ . . . . . ♅ —	4	19
	25	1	36	☌ ♀ ☾ . . . . . ♀ +	1	51
	26	23	41	☌ ☿ ♅ . . . . . ☿ +	2	20
	27	9	52	☌ ☿ ♀ . . . . . ☿ —	3	40
	27	23	22	☌ ♄ ☾ . . . . . ♄ —	5	31
	28	23	41	☌ ♀ ♅ . . . . . ♀ +	5	52
	29	13	12	☿ greatest Hel. Lat. N.		
May	3	3	17	☌ ♀ ♂ . . . . . ♀ +	4	55
	6	11	17	☌ ♂ ♅ . . . . . ♂ +	0	28
	7	16	7	☿ greatest elong. E.	21	20
	9	16	35	☌ ♀ ☉ Inf.		
	10	12	4	☌ ♆ ☉		
	15	8	54	☌ ♅ ☉		
	18	4	14	☌ ♆ ☾ . . . . . ♆ —	0	1
	20	4	21	☿ stationary.		
	20	22	48	☌ ♃ ☾ . . . . . ♃ —	3	42
	21	16	31	☌ ♀ ☾ . . . . . ♀ —	2	25
	22	12	30	☌ ♅ ☾ . . . . . ♅ —	4	22
	23	0	45	☿ in ☋		
	23	5	22	☌ ♂ ☾ . . . . . ♂ —	4	11
	23	17	41	☌ ☿ ☾ . . . . . ☿ —	5	1
	25	13	22	☌ ♄ ☾ . . . . . ♄ —	5	19
	25	20	54	♀ in ☋		
	29	14	9	♀ stationary.		
	30	15	8	☌ ☿ ♂ . . . . . ☿ —	2	39
	31	15	4	☌ ☿ ☉ Inf.		
June	2	4	45	☿ in Aphelion.		
	6	15	37	☌ ♂ ☉		
	12	15	50	☿ stationary.		
	14	11	47	☌ ♆ ☾ . . . . . ♆ —	0	20
	14	18	20	□ ♆ ☉		
	17	17	27	☌ ♃ ☾ . . . . . ♃ —	4	20
	18	10	10	☌ ♀ ☾ . . . . . ♀ —	7	8
	19	0	49	☌ ♅ ☾ . . . . . ♅ —	4	30
	19	19	28	☌ ☿ ☾ . . . . . ☿ —	8	44
	20	19	18	☉ enters ♋		
	20	22	21	☌ ♂ ☾ . . . . . ♂ —	4	20
	22	4	59	☌ ♄ ☾ . . . . . ♄ —	5	7

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d.	h.	m.		°	'
June	22	14	44	☿ gr. Hel. Lat. S.		
	25	9	40	♆ stationary.		
	25	12	34	☿ greatest elong. W.	21	54
	29	2	41	♀ in Aphelion.		
	30	12	12	☉ in Apogee.		
July	2	18	31	☌ ♀ ♅ . . . . . ♀	−3	33
	9	12	51	☌ ♄ ☉		
	11	14	41	☿ in ☊		
	11	17	22	☌ ♆ ☾ . . . . . ♆	−0	38
	14	12	40	☌ ☿ ♂ . . . . . ☿	−0	18
	15	8	23	☌ ♃ ☾ . . . . . ♃	−4	55
	16	4	24	☿ in Perihelion.		
	16	10	41	☌ ♅ ☾ . . . . . ♅	−4	43
	17	5	42	☌ ♀ ☾ . . . . . ♀	−8	25
	17	18	48	☌ ☿ ♄ . . . . . ☿	+1	14
	19	2	4	♀ greatest elong. W.	45	37
	19	14	12	☌ ♂ ☾ . . . . . ♂	−4	2
	19	20	19	☌ ♄ ☾ . . . . . ♄	−4	59
	20	4	23	☌ ☿ ☾ . . . . . ☿	−3	20
	21	17	27	♀ greatest Hel. Lat. S.		
	23	18	11	☌ ☿ ☉ Sup.		
	26	12	28	☿ greatest Hel. Lat. N.		
	26	13	57	☌ ♂ ♄ . . . . . ♂	+1	5
Aug.	6	14	30	□ ♃ ☉		
	7	22	41	☌ ♆ ☾ . . . . . ♆	−0	48
	11	19	8	☌ ♃ ☾ . . . . . ♃	−5	23
	12	17	55	☌ ♅ ☾ . . . . . ♅	−4	57
	15	11	59	☌ ♀ ☾ . . . . . ♀	−7	9
	16	9	52	☌ ♄ ☾ . . . . . ♄	−4	55
	17	5	36	☌ ♂ ☾ . . . . . ♂	−3	17
	19	0	2	☿ in ☋		
	20	20	56	☌ ☿ ☾ . . . . . ☿	−0	53
	21	16	58	□ ♅ ☉		
	28	15	8	☌ ♀ ♄ . . . . . ♀	−1	6
	29	4	2	☿ in Aphelion.		
Sept.	3	15	37	♅ stationary.		
	4	5	36	☌ ♆ ☾ . . . . . ♆	−0	50
	4	7	28	♃ stationary.		
	4	11	18	☿ greatest elong. E.	26	55
	8	2	22	☌ ♃ ☾ . . . . . ♃	−5	38
	8	23	44	☌ ♅ ☾ . . . . . ♅	−5	4
	12	20	56	☌ ♄ ☾ . . . . . ♄	−4	52
	13	23	41	☍ ♆ ☉		
	14	4	6	☌ ♀ ☾ . . . . . ♀	−4	1
	14	21	13	☌ ♂ ☾ . . . . . ♂	−1	59
	16	0	15	♀ in ☊		
	17	–	–	☉ Eclipsed.		
	17	19	57	☿ stationary.		
	18	14	1	☿ greatest Hel. Lat. S.		
	19	4	47	☌ ☿ ☾ . . . . . ☿	−2	23
	22	9	25	☉ enters ♎		
Sept.	29	17	4	☌ ♀ ♂ . . . . . ♀	−0	35
	30	16	50	☌ ☿ ☉ Inf.		
Oct.	1	14	7	☌ ♆ ☾ . . . . . ♆	−0	42
	5	7	39	☌ ♃ ☾ . . . . . ♃	−5	36
	6	6	7	☌ ♅ ☾ . . . . . ♅	−5	2
	7	13	58	☿ in ☊		
	9	0	18	☿ stationary.		
	10	5	52	☌ ♄ ☾ . . . . . ♄	−4	43
	12	3	41	☿ in Perihelion.		
	13	13	25	☌ ♂ ☾ . . . . . ♂	−0	14
	14	7	54	☌ ♀ ☾ . . . . . ♀	+0	41
	15	15	50	☌ ☿ ☾ . . . . . ☿	+2	47
	16	3	14	☿ greatest elong. W.	18	8
	17	6	52	♂ greatest Hel. Lat. N.		
	19	11	2	♀ in Perihelion.		
	20	17	55	□ ♄ ☉		
	22	11	43	☿ greatest Hel. Lat. N.		
	28	23	44	☌ ♆ ☾ . . . . . ♆	−0	43
Nov.	1	12	46	☌ ♃ ☾ . . . . . ♃	−5	23
	2	14	25	☌ ♅ ☾ . . . . . ♅	−4	55
	2	15	25	☍ ♃ ☉		
	6	13	51	☌ ♄ ☾ . . . . . ♄	−4	29
	9	3	52	♄ stationary.		
	10	12	1	♀ greatest Hel. Lat. N.		
	10	16	24	♄ in ☊		
	11	6	10	☌ ♂ ☾ . . . . . ♂	+1	48
	13	18	36	☌ ♀ ☾ . . . . . ♀	+4	43
	14	23	17	☿ in ☋		
	15	21	47	☌ ☿ ☾ . . . . . ☿	+4	21
	18	13	58	☌ ☿ ☉ Sup.		
	18	21	8	☍ ♅ ☉		
	20	11	40	♂ in Aphelion.		
	25	3	18	☿ in Aphelion.		
	25	8	38	☌ ♆ ☾ . . . . . ♆	−0	54
	28	18	48	☌ ♃ ☾ . . . . . ♃	−5	9
	30	0	6	☌ ♅ ☾ . . . . . ♅	−4	52
	30	20	43	♆ stationary.		
Dec.	3	22	1	☌ ♄ ☾ . . . . . ♄	−4	14
	9	22	49	☌ ♂ ☾ . . . . . ♂	+3	45
	13	5	5	□ ♆ ☉		
	14	4	14	☌ ♀ ☾ . . . . . ♀	+5	46
	15	13	18	☿ greatest Hel. Lat. S.		
	17	3	5	☌ ☿ ☾ . . . . . ☿	+2	29
	21	3	9	☉ enters ♑		
	22	15	55	☌ ♆ ☾ . . . . . ♆	−1	12
	26	1	54	☌ ♃ ☾ . . . . . ♃	−5	8
	27	9	19	☌ ♅ ☾ . . . . . ♅	−4	57
	29	9	54	☿ greatest elong. E.	19	30
	31	1	33	♃ stationary.		
	31	3	1	☉ in Perigee.		
	31	6	15	☌ ♄ ☾ . . . . . ♄	−4	7

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

COMPILED BY DR. B. A. GOULD.

Having been requested by Commander Davis to arrange for the Astronomical Ephemeris a Table of Latitudes and Longitudes of the principal Observatories, I have devoted some time and attention to the critical preparation of this catalogue. But since the values decided upon differ considerably in many cases from those in the other published catalogues, and in some few instances from the values which appear to be made use of at the Observatories themselves, I feel some hesitation in publishing them without asking the attention of astronomers to the catalogue, that such inaccuracies as it may contain may be corrected as speedily as possible. The sources of information are given in each case, and when possible the probable error also is given with the determination. One important change consists in the adoption of the differences of longitude between Altona and Pulkowa, and Greenwich and Altona, as determined by Struve in his chronometric expeditions of 1843 and 1844. The adoption of these values necessarily implies a corresponding change for the longitude of those Observatories whose position has been fixed by their difference of longitude from Altona or Pulkowa, or from other Observatories dependent upon these. The differences of longitude of the American Observatories are deduced from the telegraphic determinations of the United States Coast-Survey,—and have been communicated by Professor Bache, by authority of the Honorable Secretary of the Treasury. I have endeavored to include in the list all Observatories now in a state of astronomical activity, or which have been so within the last quarter of a century. Any corrections or additions with which astronomers may favor me will be gratefully acknowledged.

Åbo. . . . N. Lat. 60° 26′ 56″.8 ± 0″.11. Argelander, *Obs. Astron.*, I. p. xxi.
Long. E. from Paris, $1^{h.}$ $19^{m.}$ $47^{s.}.3$. *Astr. Nachr.*, IX. 264.

This Observatory was abandoned, and the instruments transferred, together with the University of Finland, to Helsingfors, in consequence of the great fire of 1827, by which the University buildings, library, &c. were destroyed.

Altona. . . N. Lat. 53° 32′ 45″.27. Gauss, *Bestimmung des Breiten-Unterschiedès zwischen den Sternwarten von Göttingen und Altona*, p. 71. In the edition of Schumacher's *Hülfstafeln*, published by Warnstorff, Altona, 1845, the latitude of Altona is given p. 114, as +53° 32′ 45″.7.

Long. E. from Greenwich, $0^{h.}\ 39^{m.}\ 46^{s.}.151 \pm 0^{s.}.042$. Struve, *Expédition Chronometrique executée in* 1844, *entre Altona et Greenwich*, p. 206.

Athens. . . N. Lat. 37° 58′ 20″ ± 1″. Bouris, *Astr. Nachr.*, XXXIII. 197.

Long. E. from Paris, $1^{h.}\ 25^{m.}\ 34^{s.}.23 \pm 1^{s.}$. *Ergänzungs-Heft zu den Astr. Nachr.*, 1849, p. 151. This longitude was obtained from moon-culminating stars observed on ten nights at Athens and Hamburg. The result of a series observed at Athens and Copenhagen gave the longitude of Athens $6^{s.}.84$ farther East, but this series was rejected. *Ibid.*, pp. 150, 151, 158. Diminishing the E. longitude of Hamburg in conformity with Struve's chronometric determination, we have for the longitude of the meridian-circle $1^{h.}\ 25^{m.}\ 33^{s.}.73 \pm 1^{s.}$.

The centre of the Observatory is $0^{s.}.19$ W. from the meridian-circle, *Erg.-Heft z. d. Astr. Nachr.*, p. 152.

Berlin. . . N. Lat. 52° 30′ 16″.68 ± 0″.2. Encke, *Astr. Nachr.*, XXIII. 372.

For the Longitude of the centre of the Observatory, we have

	h. m. s.	
Berlin E. from Altona,	0 13 48.78 ± 0.03	*Berl. Astr. Jahrb.*,
Altona E. from Greenwich,	0 39 46.15	[1839, p. 275.
Berlin " "	0 53 34.93	

The old Observatory was situated 0′ 56″.72 North (*Berl. Astr. Jahrb.*, 1839, p. 242; *Astr. Nachr.*, XXIII. 370), and $0^{s.}.39$ West (*Ibid.*, pp. 261, 265), of the new one. Hence we have for the old Berlin Observatory,

N. Lat., 52° 31′ 13″.4.
Long. E. from Greenwich, $0^{h.}\ 53^{m.}\ 34^{s.}.54$.

Bilk. . . . N. Lat. 51° 12′ 25″. *Astr. Nachr.*, XXVII. 300.
Long. W. from Berlin, $0^{h.}\ 26^{m.}\ 30^{s.}.0$. *Ibid.*

Bonn. . . . N. Lat. 50° 43′ 45″.0.
Long. E. from Paris, $0^{h.}\ 19^{m.}\ 3^{s.}.0$. } Orally communicated by Prof. Argelander to the compiler.

The provisional Observatory on the "Alter Zoll," in which were made the observations published in Vol. I. of the Bonn series, was situated in

N. Lat. 50° 44′ 9″.
Long. E. from Paris, $0^{h.}\ 19^{m.}\ 5^{s.}.5$. *Bonn Astr. Beobb.*, I. p. i.

Breslau. . . N. Lat. 51° 6′ 56″.0. (MS. communication from Professor Boguslawski to Professor Encke.) *Berl. Astr. Jahrb.*, 1852, p. 289. The value given in the *Berl. Jahrb.* previously to 1851, was 51° 6′ 30″.0.

The Longitude given in the table is derived from a mean of four determinations of the longitude E. from Paris, viz.: —

	h. m. s.
Triangulation in 1805 (fire-signals), *Astr. Nachr.*, XVI. 371,	0 58 48.6
Steczkowski (6 star-immersions), *Ibid.*,	48.17
Hansen (occultations). *Astr Nachr.*, XVII. 170.	48.74
Erman and Petersen (meteors), *Astr. Nachr.*, XIX. 27,	48.67
Mean, Breslau E. from Paris,	0 58 48.54

Brussels. . . . N. Lat. 50° 51′ 10″.7. *Annales de l'Obs. de Bruxelles*, 1837, p. 264.

Long. W. from Greenwich, 0ʰ· 17ᵐ· 27ˢ.6. Quetelet, *Mém. de l'Acad. R. de Bruxelles*, XVI. 18.

Cambridge (Eng.). N. Lat. 52° 12′ 51″.76. *Camb. Phil. Trans.*, V. 279.

Long. E. from Greenwich, 0ʰ· 0ᵐ· 23ˢ.54. *Ibid.*, III. 168.

Cambridge (Mass.). N. Lat. 42° 22′ 48″.60. Peirce, *Mem. Amer. Acad.*, *N. S.*, II. 203.

Long. by the telegraphic determinations of the U. S. Coast-Survey,

Cambridge E. from Stuyvesant Garden, N. Y.,	h. m. s.
By 34 sets of clock-signals,	0 11 26.10
" 10 " " star-signals (Western),	26.13
" 24 " " " (exchanged E. and W.),	25.96
" 17 " " " (Eastern),	26.18
Mean,	0 11 26.09
Geodetic reduction to dome of Cambridge Observatory,	—0.02
Stuyvesant Garden E. of Jersey City (geodetic),	0 11.93
Cambridge E. from C. S. Station, Jersey City,	0 11 38.00
Jersey City E. from Washington (see Philadelphia),	0 12 3.54
Cambridge (dome) E. from Washington,	0 23 41.54

Cape of Good Hope. S. Lat. 33° 56′ 3″. Henderson, *Mem. R. Astr. Soc.*, VI. 130.

Long. E. from Greenwich,

	h. m. s.		
By Greenwich Observations,	1 13 56.1	*Ibid.*,	p. 126.
" Cambridge "	55.04	"	p. 127.
" Åbo "	58.56	"	p. 128.
" Edinburgh "	54.2	"	p. 129.
Mean,	1 13 56.0		

Christiania. . . N. Lat. 59° 54′ 43″.7.
Long. E. from Paris, 0ʰ· 33ᵐ· 33ˢ.3. } *Astron. Journ.*, II. 173.

Cincinnati. . . . N. Lat. 39° 5′ 54″. *Astr. Nachr.*, XXIII. 313.

Long. W. from Washington, 0ʰ· 29ᵐ· 46ˢ.85. (U. S. Coast-Survey.) *Proc. Amer. Assoc. for Adv. Science*, Cincinnati, 1851, p. 118.

Copenhagen. By Copenhagen Observatory is usually understood the "Round Tower" of the University. The new instruments are, however, mounted in a temporary wooden building known as "Holkens Bastion." (See *Astr. Nachr.*, XIX. 119).

N. Lat. of the Round Tower, 55° 40′ 53″.0. *Astr. Nachr.*, V. 366.

For the Longitude,

	h. m. s.	
Holkens Bastion E. from Altona,		
Hansen (*Astr. Nachr.*, VIII. 281),	0 10 32.585	139.88
Schumacher (*Astr. Nachr.*, IX. 463),	32.565	19.42
Mean,	10 32.583	
Altona E. from Greenwich,	39 46.151	
Holkens Bastion E. from Greenwich,	50 18.734	
Round Tower E. from Holkens Bastion (Wurm, *Astr. Nachr.*, III. 438; V. 337),	0.57	
Round Tower E. from Greenwich,	0 50 19.30	

Cracow . N. Lat. 50° 3′ 50″.0 ± 0.09. Weisse, *Astr. Nachr.*, VIII. 175; XVI. 256.

Longitude E. from Paris,

	h. m. s.	
Mean of 18 obs. by Wurm (*Astr. Nachr.*, VIII. 459), (6 of the 25 being rejected),	1 10 28.986	± 0.461
Mean of 25 obs. by Steczkowski (*Astr. Nachr.*, XVI. 352),	30.221	± 0.301
Mean of 4 obs. by Steczkowski (*Astr. Nachr.*, XVIII. 332),	29.760	± 0.085
Mean of 16 obs. of three occultations (Steczkowski, *Astr. Nachr.*, X. 232),	30.95	± 0.253
Assigning to each of these determinations a weight proportional to the number of observations from which it was derived, we obtain the mean,		
Cracow E. from Paris,	1 10 29.78	

Dorpat . . N. Lat. 58° 22′ 47″.05. Struve, *Observ. Astron.*, VI. p. lx.

	h. m. s.			
Long. E. from Paris,	1 37 32.70.	Wurm,	*Astr. Nachr.*,	III. 437.
	33.5	Bessel,	"	III. 46.
Mean,	1 37 33.1			

Dublin . . N. Lat. 53° 23′ 13″.

Long. W. from Greenwich, 0h. 25m. 22s. *Astr. Nachr.*, X. 274.

Durham. . N. Lat. 54° 46′ 6″.4.

Long. W. from Greenwich, 0h. 6m. 18s.0. *Astr. Nachr.*, XXVI. 215.

Edinburgh. . N. Lat. 55° 57′ 23″.2.
Long. W. from Greenwich, 0$^{h.}$ 12$^{m.}$ 43$^{s.}$.0. *Edinb. Observ.*, X. p. v.

Florence. . N. Lat. 43° 46′ 40″.8. Zach, *Corresp. Astron.*, I. 15.
Long. E. from Paris, 0$^{h.}$ 35$^{m.}$ 40$^{s.}$.2. *Ibid.*, p. 14.

Geneva. . . N. Lat. by observations of pole-star, 46° 11′ 58″.72 ± 0″.1
" " " nadir-point, 58.97 ± 0.1
Mean, 46 11 58.84 Plantamour, *Mém. de la Soc. de Physique et d'Hist. Nat. de Genève*, XI. 15.
Long. E. from Paris, 0$^{h.}$ 15$^{m.}$ 16$^{s.}$.22. *Astr. Nachr.*, XX. 7.

Georgetown. N. Lat. 38° 54′ 26″.1. *Astron. Journ.*, I. 69.
Long. W. from Washington, 0$^{h.}$ 0$^{m.}$ 6$^{s.}$.20. *Astron. Journ.*, I. 70.

Göttingen. . Gauss found, *Best. d. Breit.-Untersch.*, p. 71, for the N. Latitude of the meridian-circle, 51° 31′ 47″.85, with the weight 60.9.

The Longitude of the same Gauss found (*Ibid.*) by his trigonometrical survey to be West of the meridian-circle in Altona by 7.211 Paris Toises. Using Bessel's data we find 1$^{s.}$ = 148.33 Toises, whence we have,

	h.	m.	s.
Gottingen West of Altona,	0	0	0.049
Altona East of Greenwich,	0	39	46.151
Gottingen East of Greenwich,	0	39	46.102

For the old Observatory,
Lat. = +51° 31′ 55″.6. *Monatl. Corr.*, XXVII. 483.
Long. E. of Paris, 0$^{h.}$ 30$^{m.}$ 25$^{s.}$.2. *Astr. Nachr.*, II. 407, 408.

Gotha. . . (Seeberg.)
N. Lat. 50° 56′ 5″.19. Gauss, *Best. d. Breit.-Untersch.*, p. 80.
For the Longitude E. from Paris,
Wurm found by 11 occultations (*Astr. Nachr.*, II. 405), h. m. s. 0 33 34.8 ± 0.13
Peters found (*Astr. Nachr.*, V. 68),

		m.	s.	Weight.
Seeberg East from	Altona,	3	10.2	2
" "	Göttingen,	3	8.9	15
West "	Königsberg,	39	5.6	18
East "	Paris,	33	34.3	24
West "	Vienna,	22	38.0	17

Whence, using the present data, we find,

	h.	m.	s.
Seeberg E. from Paris,	0	33	33.66
Mean,	0	33	34.2

For the Observatory attached to Professor Hansen's house,
Long. E. from Paris, 0$^{h.}$ 33$^{m.}$ 30$^{s.}$.046. Schumacher, *Astr. Nachr.*, XXIII. 263.

Greenwich. . N. Lat. 51° 28′ 38″.2. Airy, *Mem. Astr. Soc.*, XVII. p. 49.
Long. W. from Paris, $0^{h.}\ 9^{m.}\ 21^{s.}.46$ ± 15. Henderson, *Phil. Trans.*, 1827, p. 286. See also Washington.

Hamburg. . N. Lat. 53° 33′ 7″, by geodetical connection with Altona. *Preface to* Rümker's *Catalogue.*
The Longitude given in the table is derived thus :

	h.	m.	s.
Hamburg E. from Altona (Hansen, *Astr. Nachr.*, VIII. 277),	0	0	7.41
Altona E. from Greenwich (Struve, *Exp. Chron. de* 1844),	0	39	46.15
Whence Hamburg E. from Greenwich,	0	39	53.56

Hudson. . . N. Lat. 41° 14′ 42″.6. Loomis, *Trans. Am. Phil. Soc.*, N. S., X. 61.
Long. W. from Philadelphia (U. S. Coast-Survey),

	h.	m.	s.
By 3 sets Eastern clock-signals,	0	25	5.72
" 2 " Western "			5.68
	0	25	5.70
Philadelphia E. from Washington,		7	33.64
Hudson W. from Washington,	0	17	32.06

Professor Loomis deduced from moon-culminations,
Hudson W. from Greenwich, $5^{h.}\ 25^{m.}\ 41^{s.}.3$. *Astr. Journ.*, I. 67.

Kasan. . . N. Lat. 55° 47′ 23″.1. *Astr. Nachr.*, XXVIII. 47.
Long. E. from Berlin, $2^{h.}\ 22^{m.}\ 57^{s.}.0$. *Berl. Astr. Jahrb.*, 1854, p. 293.

Königsberg. . N. Lat. 54° 42′ 50.″4. Bessel, *Astr. Nachr.*, I. 248.

	h.	m.	s.		
Long. E. from Paris,	1	12	38.8	Wurm, *Astr. Nachr.*,	III. 437.
			38.93	Bessel, "	III. 46.
Mean,	1	12	38.9		

Kremsmünster. N. Lat. 48° 3′ 23″.81 ±0″.03. *Astr. Nachr.* XXXVII. 271.
Long. E. from Paris, $0^{h.}\ 47^{m.}\ 11^{s.}.96$. Schumacher, *Astr. Nachr.*, XXIII. 263.

Leipsic. . . (Pleissenburg.)

N. Lat.	°	′	″		Weight.
D'Arrest, *Astr. Nachr.*, XXVIII. 148,	51	20	20.7	±0.36	26.37
D'Arrest, *Astr. Nachr.*, XXVIII. 160,			20.4		

Long. E. from Greenwich, $0^{h.}\ 49^{m.}\ 28^{s.}.5$.

Leyden. . . N. Lat. 52° 9′ 28″.16 ± 0″.15 } Kaiser, *Astr. Nachr.*,
Long. E. from Paris, $0^{h.}\ 8^{m.}\ 35^{s.}.97$ ± $0^{s.}.19$ } XVII. 100.

Liverpool. . N. Lat. + 53° 24′ 47″.72. *M. Notices Astr. Soc.* XIII., 247.
Long. W. from Greenwich, $0^{h.}\ 12^{m.}\ 0^{s.}.11$ *Naut. Alm.*, 1852, p. 598.

London. . (Mr. Bishop's Observatory.)

N. Lat. 51° 31′ 29″.8. *Astr. Obs. at the Observatory South Villa*, p. xix.

Long. W. from Greenwich, $0^{\text{h}}\ 0^{\text{m}}\ 37^{\text{s}}.1$.

Madras. . N. Lat. 13° 4′ 9″.2.

Long. E. from Greenwich, $5^{\text{h}}\ 20^{\text{m}}\ 57^{\text{s}}$. Taylor, *Madras General Catal.*, 1844, *Pref.* p. ii.

Mannheim. N. Lat. 49° 29′ 12″.9. *Astr. Nachr.*, XII. 129.

Long. E. from Paris, as determined

	h. m. s.
By Wurm, from occultations (*Astr. Nachr.*, VIII. 458),	0 24 29.92
" connection with Strasburg (*Astr. Nachr.*, XV. 280),	29.87
" " " Vienna (*Astr. Nachr.*, XV. 279; XXIII. 263),	30.28
By connection with Dunkirk (Müffling, *Astr. Nachr.*, XV. 279),	30.05
By Olufsen from Solar Eclipse (*Astr. Nachr.*, XXII. 234),	30.10
Mean,	0 24 30.04

Markree. . N. Lat. 54° 10′ 31″.72. *Astr. Journ.*, II. 12.

Long. W. from Greenwich, $0^{\text{h}}\ 33^{\text{m}}\ 48^{\text{s}}.4$. *Naut. Alm.*, 1852, p. 598.

Marseilles. N. Lat. 43° 17′ 49″. *Monatl. Corresp.*, XIII. 139.

Long. E. from Paris, according to

	No. Obs.	h. m. s.
Lindenau (*Monatl. Corr.*, XIX. 421),	4	0 12 7.7
Wurm (*Monatl. Corr.*, XXVI. 185),	19	7.6
" (*Astr. Nachr.*, IV. 33),	12	7.5
Innes (*Astr. Nachr.*, VIII. 435),	4	7.05
Mean,		0 12 7.53

Milan. . (Brera.)

N. Lat. 45° 28′ 0″.7. *Corresp. Astron.*, V. 300; *Effem. Astr. di Milano*, 1846, *App.*, pp. 73–86.

Long. E. from Paris,

	m. s.	h. m. s.
Daussy found from 31 occultations (*Conn. d. Temps*, 1836, *Add.*, p. 131),		0 27 24.91
Littrow found Milan W. from Vienna (*Ibid.*),	28 45.63	
	56 11.07	
		0 27 25.44
Mean,		0 27 25.18

Modena. . N. Lat. 44° 38′ 52″.75. Bianchi, *Astr. Nachr.*, XVI. 221; *Atti del R. Osserv. di Modena*, I. 336 (1834).

Long. E. from Milan, $0^{\text{h}}\ 6^{\text{m}}\ 55^{\text{s}}.99$. *Id.*, p. 337.

Hence E. from Paris,

	h. m. s.		
By comparison with Milan,	0 34 20.45		
Wurm from occultations,	23.5	*Astr. Nachr.*,	I. 504.
" " "	24.5	"	III. 222.
Steczkowski from occultations,	21.81	"	XVI. 299, 302.
Olufsen from solar eclipse,	22.32	"	XXII. 234.
Mean,	0 34 22.51		

Moscow. . N. Lat. 55° 45′ 19″.8. Schweizer, *Astr. Nachr.*, XXVII. 215.

	h. m. s.	
Long. Moscow E. from Pulkowa,	0 28 58.2	*Astr. Nachr.*, XXIV. 90.
Pulkowa E. from Greenwich,	2 1 19.09	
Moscow " " " .	2 30 17.29	

Munich. . (Bogenhausen.)

N. Lat. 48° 8′ 45″. Soldner, *Astr. Nachr.*, IX. 422.

Long. E. from Paris, $0^{\text{h.}}\ 37^{\text{m.}}\ 4^{\text{s.}}.98$. *Astr. Nachr.*, VIII. 148.

Naples. . N. Lat. 40° 51′ 46″.63. Brioschi, *Astr. Nachr.*, V. 294.

The Longitude adopted is that by which Peters has apparently made his reductions, *Astr. Nachr.*, XXIII. 302, 303, according to which we have,

Naples E. from Berlin, $0^{\text{h.}}\ 3^{\text{m.}}\ 26^{\text{s.}}.0$.

For determinations from solar eclipses by Brioschi and Santini, see *Astr. Nachr.*, VI. 413.

Oxford. . N. Lat. 51° 45′ 36″.0 } *Naut. Alm.*, 1852, p. 599.
Long. W. from Greenwich, $0^{\text{h.}}\ 5^{\text{m.}}\ 2^{\text{s.}}.6$ }

Padua. . N. Lat. 45° 24′ 2″.5. Santini, *Astr. Nachr.*, VI. 411; XVII. 346.

Long. E. from Paris,

	h. m. s.	h. m. s.
Wurm (*Astr. Nachr.*, IV. 347),		0 38 7.7
Padua E. from Milan by powder signals (Fallon, *Astr. Nachr.*, IV. 115),	0 10 43.27	
Milan E. from Paris,	27 24.18	
		0 38 7.45
Mean, Padua E. from Paris,		0 38 7.57

Palermo. . N. Lat. 38° 6′ 44″. Cacciatore, *Del Real Osservatorio di Palermo Libri* VII., VIII., IX., p. 2; *Storia Celeste del R. Osserv. di Palermo*, in *Ann. d. Wiener Sternwarte*, XXIV. 6.

Long. E. from Paris, $0^{\text{h.}}\ 44^{\text{m.}}\ 4^{\text{s.}}.0$. Daussy, *Add. Conn. d. Temps*, 1835, p. 8.

Bianchi, *Astr. Nachr.*, XVII. 350, calls the latitude of the Palermo Observatory, +38° 6′ 25″.50.

Paramatta. S. Lat. 33° 48′ 49″.79. Rümker, *Phil. Trans.*, 1829, Part III. p. 16.

Long. E. from Greenwich, $10^{\text{h.}}\ 4^{\text{m.}}\ 6^{\text{s.}}.25$. *Ibid.*, p. 29.

Paris. . . N. Lat. 48° 50′ 13″.2. *Conn. d. Temps*, 1835, p. 356.
Long. as above under Greenwich.

St. Petersburg. (Academy.)
N. Lat. 59° 56′ 29″.67.
Long. W. from Pulkowa, 0^{m} $5^{s}.194$. STRUVE, *Description de l'Obs. de Poulkova*, p. 292.

Philadelphia. N. Lat. 39° 57′ 7″.5. MS. communication from Professor KENDALL.
Long. E. from Washington (U. S. Coast Survey),

	m. s.
By 5 sets Eastern clock-signals,	7 33.66
" " Western "	33.60
Mean,	7 33.63

Long. Jersey City Station E. from Washington,

	m. s.
By 2 sets Eastern clock-signals,	12 3.58
" " Western "	3.52
Mean,	12 3.56

Long. W. from Jersey City Station,

By 8 sets Eastern clock-signals,	4 29.91
" " " " "	29.84
Mean,	4 29.88

Hence we may use,

	h. m. s.
Jersey City Station E. from Philadelphia,	0 4 29.89
" " " Washington,	0 12 3.53
Philadelphia, " "	0 7 33.64

Prague. . . N. Lat. 50° 5′ 18″.5. DAVID, *Astr. Nachr.*, VIII. 198.
Long. E. from Paris,

	h. m. s.	
Mean of 6 occultations (*Astr. Nachr.*, XVI. 299, 302),	0 48 21.66	± 4.15
HANSEN from occultations (*Astr. Nachr.*, XVII. 170),	19.59	± 3.67
Mean, Prague E. from Paris,	0 48 20.50	

Pulkowa. . N. Lat. 59° 46′ 18″.70. STRUVE, *Descr. de l'Obs. de Poulkova*, p. 290.

	h. m. s.	
Long. E. from Altona (*Exp. Chron. de* 1843, p. 144),	1 21 32.523	± 0.039
Altona E. from Greenwich (*Exp. Chron. de* 1844, p. 206),	0 39 46.151	± 0.042
Pulkowa E. from Greenwich (*Exp. Chron. de* 1844, p. ix.),	2 1 18.674	± 0.057

Rome. . . (Collegio Romano.)
N. Lat. 41° 53′ 54″. *Conn. d. Temps*, 1840, p. 354.
Long. E. from Greenwich, $0^{h.}$ $49^{m.}$ $54^{s}.7$. *Astr. Nachr.*, VIII. 88.

San Fernando. N. Lat. 36° 27′ 45″. *Corresp. Astron.*, XIV. 240.

Long. W. from Paris, $0^{h.}\ 34^{m.}\ 10^{s}.6 \pm 0^{s}.31$. *Astr. Nachr.*, IX. 358.

Santiago. . (Observatory of the U. S. Astronomical Expedition.)

S. Lat. 32° 26′ 24″.8. GILLISS, *Astron. Journ.*, III. 55.

Long. W. from Greenwich, $4^{h.}\ 42^{m.}\ 18^{s}.9$. GILLISS, *Astron. Journ.*, II. 118.

Senftenberg. . N. Lat. 50° 5′ 10″.1.
Long. E. from Berlin, $0^{h.}\ 12^{m.}\ 15^{s}$. } *Astr. Nachr.*, XXXI. 174, 331.

Vienna. . . N. Lat. 48° 12′ 35″.5. *Berl. Astr. Jahrb.*, 1852, p. 290.

Long. E. from Paris, $0^{h.}\ 56^{m.}\ 11^{s}.07$. SCHUMACHER, *Astr. Nachr.*, XXIII. 263.

Washington. . N. Lat. 38° 53′ 39″.25. *Astron. Journ.*, III. 12.

Long. W. from Greenwich, as derived from data of the U. S. Coast Survey, up to 1852, $5^{h.}\ 8^{m.}\ 11^{s}.2$.

Lieutenant MAURY uses $5^{h.}\ 8^{m.}\ 10^{s}.17$. *Astron. Journ.*, III. 12.

The situation of the first, or provisional, Naval Observatory, in which were made the observations published by Lieutenant GILLISS was,

N. Lat. 38° 53′ 32″.8. GILLISS, *Astr. Obs.*, p. viii.

Long. W. from Greenwich, $5^{h.}\ 8^{m.}\ 4^{s}.6$. *Ibid.*, p. x.

Wilna. . . N. Lat. 54° 40′ 59″.1. *Astr. Nachr.*, IV. 562.

Long. E. from Paris,

	h.	m.	s.
WURM from 22 occultations (*Astr. Nachr.*, VIII. 96),	1	31	50.4
STECZKOWSKI from 1 occultation (*Astr. Nachr.*, XVI. 302),			48.3
Mean,	1	31	50.31

These results are arranged in the following Table for reference.

ADDENDUM.

Olmutz. . . N. Lat. 49° 35′ 40″.
Long. E. from Greenwich, $1^{h.}\ 9^{m.}\ 0^{s}.1$. } *Astr. Nachr.*, XXXVII. 77.

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(*North Latitudes and West Longitudes are considered as positive.*)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h. m. s.	° ′ ″	° ′ ″
Åbo,	+60 26 56.8	— 6 37 20.0	260 40 0.6	337 42 48.6
Altona,	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Athens,	+37 58 20	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin,	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk,	+51 12 25	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn,	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau,	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels,	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.),	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania,	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati,	+39 5 54	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen,	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow,	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat,	+58 22 47.1	— 6 55 5.8	256 13 33.6	333 16 21.6
Dublin,	+53 23 13	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham,	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh,	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence,	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva,	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown,	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen,	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha,	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich,	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0
Hamburg,	+53 33 7	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson,	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan,	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg,	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster,	+48 3 23·8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic,	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden,	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool,	+53 24 47.7	— 4 56 11.1	285 57 13.7	3 0 1.7
London,	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras,	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim,	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree,	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles,	+43 17 49	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan,	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena,	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow,	+55 45 19.8	— 7 38 28.5	245 22 52.7	322 25 40.7
Munich,	+48 8 45	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples,	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Oxford,	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua,	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo,	+38 6 44	— 6 1 36.7	269 35 50.1	346 38 38.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
	° ′ ″	h. m. s.	° ′ ″	° ′ ″
Paramatta,	—33 48 49.8	+8 47 42.6	131 55 38.3	208 58 26.3
Paris,	+48 50 13.2	—5 17 32.7	280 36 50.1	357 39 38.1
St. Petersburg,	+59 56 29.7	—7 9 24.7	252 38 49.8	329 41 37.8
Philadelphia,	+39 57 7.5	—0 7 33.6	358 6 35.4	75 9 23.4
Prague,	+50 5 18.5	—6 5 53.2	268 31 42.6	345 34 30.6
Pulkowa,	+59 46 18.7	—7 9 29.9	252 37 31.9	329 40 19.9
Rome,	+41 53 54	—5 58 5.9	270 28 31.5	347 31 19.5
San Fernando,	+36 27 45	—4 43 22.1	289 9 29.1	6 12 17.1
Santiago,	—33 26 24.8	—0 25 52.3	353 31 55.5	70 34 43.5
Senftenberg,	+50 5 10.1	—6 14 1.1	266 29 43.1	343 32 31.1
Vienna,	+48 12 35.5	—6 13 43.7	266 34 4.1	343 36 52.1
Washington,	+38 53 39.3	—0 0 0	0 0 0	77 2 48.0
Wilna,	+54 40 59.1	—6 49 23.0	257 39 15.5	334 42 3.5

ADDENDUM.

Olmutz, +49° 35′ 40″.0 —6h. 17m. 11s.3 265° 42′ 10″.5 342° 44′ 58″.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

This Ephemeris is divided into two distinct parts. One part is designed for the special use of Navigators, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of Astronomers, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the Distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1857; and also Chauvenet's New and Accurate Method of correcting Lunar Distances, his Improved Method of finding the Error and Rate of a Chronometer by Equal Altitudes, and some useful Tables, constituting an Appendix.

Time.—Astronomers make use of three kinds of time, Sidereal Time, Mean Time, and True or Apparent Time. As there is frequent occasion to pass from one to another of these modes of reckoning time, the explanation of their nature, and of the manner of doing this, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time is measured by the successive returns of the mean place of a star to the meridian. These returns are precisely equal, and the mean daily motion of the star is uniform; or, in other words, the diurnal rotation of the earth on its axis is strictly uniform.

The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the vernal equinox over the superior meridian, and terminating with its return to the same point. The daily change, therefore, in the right ascension of the vernal equinox caused by the motion of precession in right ascension, produces a difference between the length of the sidereal day thus adopted, and the true sidereal or *star* day. But this change is annually about $50''$, or $3^s.3$ in time, so that the daily change is less than $0^s.01$, and is wholly insensible.

True or *Apparent Time* is measured by the successive returns of the sun to the meridian of the place of observation. The interval between these returns is called a Solar Day, and the hour angle of the sun, or its distance from the meridian, is called Solar Time. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes: one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is denoted by the motion of this *mean sun;* the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

The difference between the *true* and *mean* time is called the *Equation of Time*, which is always expressed in mean time. By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found. If the *mean* time be given, the *true* time is obtained by applying the equation of time in the sense opposite to that directed by this precept. These transformations are algebraically expressed as follows: —

$$\text{mean time} = \text{true time} + \text{equation of time};$$
$$\text{true time} = \text{mean time} - \text{equation of time}.$$

Day. — According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, $2^{h.}$ A. M., *civil day*, is January 9th, $14^{h.}$, *astronomical day;* and January 9th, $2^{h.}$ P. M., *civil day*, is also January 9th, $2^{h.}$, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: if the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

The Nautical part of the Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows: —

Pages I., II., III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to mean noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of Bowditch's *American Practical Navigator*. The use of the sun's declination in finding the magnetic amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at $3^{h.}$ $40^{m.}$ P. M., of Sunday, January 18th, 1857, the declination of the sun would be taken out first for

January 18th, at noon,	20° 29′ 38″.1 S.
From which subtract the diff. for 1 hour, 30″.87, multiplied by 3,	1 32.6
	20 28 5.5
And the proportional part for 40 minutes,	20.6
The result is the sun's declination on the 18th, at 3h. 40m. P. M.,	20 27 44.9

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent time*, or the time given by an observation of the sun, to obtain the *mean time*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 16th, at 3h. 20m. P. M., were required, we should have

	m. s.
Equation for January 16, at noon,	10 8.52
Correction for 3h. 20m. (additive),	2.81
Equation, January 16, at 3h. 20m. P. M.,	10 11.33

Which, according to the rule at the head of the column, is *to be added* to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich *Mean* Noon; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns headed λ and λ′; the one, λ, is the Sun's longitude counted from the true equinox of the date; the other, λ′, is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the Sun's longitude for any hour from noon. The hourly differences of the logarithm of the Radius Vector are likewise given. The longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. of the Nautical part contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XI. of Bowditch's *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M. of the 3d of January, then we say that as twelve hours is to 1″.5, the whole difference between the semidiameters at noon and midnight of the 3d, so is nine hours to 1″.1, the correction to be *added* to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for Jan. $3^{d.}$ $9^{h.}$ is 16′ 9″.8. Adjoining the columns containing the Moon's *Horizontal Parallax* for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from Bowditch's Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Thursday, January $1^{d.}$ $8^{h.}$ $10^{m.}$, we have only to add to the right ascension at $8^{h.}$ as given in the Ephemeris, viz. to $23^{h.}$ $25^{m.}$ $5^{s.}$.44, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of $2^{s.}$.0617 by 10, or $20^{s.}$.62; the result is the moon's right ascension at the required time, equal to $23^{h.}$ $25^{m.}$ $26^{s.}$.06. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be subtractive, because the declination, unlike the right ascension, is decreasing; thus,—

	° ′ ″
Moon's declination for January $1^{d.}$ $8^{h.}$.	5 43 4.3 S.
Correction for $10^{m.}$ is 162″.8, or	2 42.8
Moon's declination for January $1^{d.}$ $8^{h.}$ $10^{m.}$.	5 40 21.5

The last page of the right ascensions and declinations contains the ***Phases* of the Moon**, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distance from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the British *Nautical Almanac*, in order to conform to the rules of Bowditch's *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letters E. and W. are affixed to the name of the star or planet, to indicate whether they are on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 1st of March, at midnight, of Greenwich mean time, the distance of the moon's centre from the planet Mars west of her, is 50° 10′ 57″, and at fifteen hours of the same date it is 51° 51′ 33″; the difference between the two distances is 1° 40′ 36″, or, reduced to seconds, is 6036″, the logarithm of which subtracted from the logarithm of three hours, or 10800ˢ, gives for the proportional logarithm of the difference between the two distances, 2527, as it is in the column headed *P. L. of Diff.* If the calculated *true distance* of the navigator lie between the two given distances above mentioned, as, for instance, if it should be 51° 12′ 1″, the corresponding correction of the time would be found as follows: —

		°	′	″
Distance in the Ephemeris at Midnight,		50	10	57
Calculated *True Distance*,		51	12	1
Difference,		1	1	4
Prop. log. in Ephemeris,	2527			
Prop. log. of Difference, 1° 1′ 4″,	4695			
Prop. log. of 1ʰ· 49ᵐ· 16ˢ·	2168;			

and this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance 1ʰ· 49ᵐ· 16ˢ· on the morning of the 2d of March.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 64 of the Appendix, and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The calendar pages extend to 217, and the remainder of the Nautical Part, from page 218 to page 241, contains the Ephemeris of the four Planets, Venus, Mars, Jupiter, and Saturn, employed either in lunar distances or in the determination of the latitude or the time. The Ephemeris of the Planets consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax for every fifth day of the month. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar Coördinates for Greenwich mean noon, which form the basis of the Solar Ephemeris for that date, are added.

Finally, the Mean Places of the one hundred principal Fixed Stars for January 1, 1857, are given on pages 252, 253, 254. These stars may be used by the navigator for the determination of the latitude and time, as is shown by Bowditch; they may also be employed to determine the ship's place by means of Sumner's simple method of the intersection of two lines of direction.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. ot each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or $0^{h.}$ If, then, a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, α Tauri (*Aldebaran*), on the evening of January 1, 1857, the process for obtaining the time of meridian passage would be as follows: —

	h. m. s.
Mean Time of sidereal $0^{h.}$ Jan. 1, 1857,	5 14 48
Correction for Longitude omitted.	
Right Ascension of α Tauri (*Aldebaran*),	4 27 39
Time of star's meridian passage,	9 42 27

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in Bowditch's Navigator, p. 223.

Professor Chauvenet's problems in the Appendix are accompanied with explanations and examples which facilitate their use.

Note. — The Right Ascension, Declination, Equation of Time, and Sidereal Time of Mean Noon, have been computed from Hansen's Solar Tables, using Peters' Notation and Obliquity. The Semidiameter, and Sidereal Time of Semidiameter passing the meridian, have been computed as in the Almanacs for 1855 and 1856.

THE ASTRONOMICAL PART.

THIS part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 246. — On this page are given the apparent obliquity. the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars. — The Logarithms A, B, C, D, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every five days. To these tables are added BESSEL's formulas of reduction, with PETERS' coefficients, and the notation of the catalogue of stars of the British Association.

The *mean* places of 100 principal Fixed Stars on January 1, 1857; the *apparent* places of α and δ Ursæ Minoris, at the time of the upper transit at Washington, for every day of the year; and the *apparent* places of the remaining principal stars for every ten days; together with a table giving the correction of 51 Cephei, σ Octantis, and λ Ursæ Minoris, for terms of nutation involving 2 ☾, — complete the subject of the Fixed Stars.

Solar Ephemeris. — In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the degrees and minutes being usually the same as for mean noon. Where the change of a minute occurs, it is indicated by a colon (:).

The *Moon Culminations* and *Moon-culminating Stars* are given in two distinct lists. The list of Moon Culminations contains both the solar and sidereal dates of transit; the apparent right ascension is the right ascension of the limb, and the declination is the declination of the centre, at their respective periods of culmination. The form of the lists of moon-culminating stars has been somewhat changed. In the first volume of the Ephemeris, reference to the stars to be used in connection with the Moon was made by a figure, and the stars themselves were entered successively in the order of numbers. In the present volume these figures are dispensed with, and the proper star to be observed in connection with the transit of the moon's limb is determined by means of the sidereal dates, common to both lists. Each star occupies a separate column containing its right ascension to hundredths of seconds for every sidereal date throughout the year for which it is available, and also its declination and magnitude. The first column of each page contains the sidereal date, and the last the daily change in right ascension of the corresponding stars. It is hoped that the standard observatories will determine the place of each one of these stars once at least in the course of the year. The whole list has been taken from the Twelve-Year Catalogue.

The *Ephemeris of the Moon*, which follows, and the *Moon's Phases*, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given.

The ephemeris of the two interior planets is given for mean noon and the time of transit; and that of the exterior planets is given for sidereal noon and the time of transit. The place of a planet for any number of minutes t, from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formula,

$$\text{Planet's R. A. (or Dec.)} = A + B\,t + C\,t^2,$$

$$\begin{aligned} \text{in which } A &= \text{R. A. (or Dec.) for the noon,} \\ B &= \text{the motion of R. A. (or Dec.) for 1 minute,} \\ \text{or, more exactly, } &= \text{the factor of } t\text{, as given in the Ephemeris;} \\ C &= \text{the factor of } t^2 = \text{factor for second differences.} \end{aligned}$$

The *Solar Coördinates* are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator, at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* are given for days of the Julian Period, in order that they may be a part of a connected series, and therefore more convenient for the continued computation of perturbations.

Eclipses. — The *Tables of Data* of the *Solar Eclipses* are adapted to very accurate computation by the following formulas.

$$\begin{aligned} \text{Let } \phi &= \text{the latitude of the place,} \\ \lambda &= \text{its western longitude from Washington,} \\ \log e &= 8.9110835, \\ \log\,(1 - e^2) &= 9.9971066, \\ \sin \phi' &= e \sin \phi, \\ h &= \sec \phi' \cos \phi, \\ k &= (1 - e^2) \sec \phi' \sin \phi, \\ a &= A - h \sin\,(\mu - \lambda), \\ b &= B - E\,k + G\,h \cos\,(\mu - \lambda), \\ c &= -C + F\,k - H\,h \cos\,(\mu - \lambda), \\ m &= \sqrt{b\,c}. \end{aligned}$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a. If m is not equal to a, the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t, which may be obtained in seconds by the formulas,

$$\begin{aligned} \log \mu' &= 1.86167, \\ \tan \tfrac{1}{2}\,\psi &= \frac{c}{m} = \frac{m}{b}, \\ a' &= A' - \mu'\,h \cos\,(\mu - \lambda), \\ b' &= B' - \mu'\,G\,h \sin\,(\mu - \lambda), \\ t &= \frac{1000000\,(m - a)}{a' + b' \cot \psi}; \end{aligned}$$

ψ must be taken of the same sign with a, and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a.

The magnitude of the eclipse is found by taking the difference (with regard to the signs) of ψ at the beginning and end of the eclipse, and if this difference is denoted by $2\,\theta$, the magnitude of the eclipse is

$$24.5 \sin^2 \tfrac{1}{2}\,\theta \text{ or } 24.5 \cos^2 \tfrac{1}{2}\,\theta,$$

accordingly as θ is acute or obtuse.

The value of θ may also be obtained by the formulas,

$$\begin{aligned} \tan \chi &= \frac{b'}{a'}, \\ \theta &= \psi + \chi, \end{aligned}$$

(in which χ has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m - a}{a'} \cdot \frac{\cos\chi \sin\psi}{\sin\theta} .$$

The following is an example of the computation of the beginning of the Total Eclipse of March 25, for Presidio Hill, San Francisco, California.

For Presidio Hill, ϕ	$= + 37^\circ\ 47'\ 35''.6$	λ	$= 45^\circ\ 24'\ 0''$
$\log \sin \phi$	$= 9.787328$	$\log \cos \phi$	$= 9.897752$
$\log \sin \phi'$	$= 8.698412$	$\log \sec \phi'$	$= 0.000542$
$\log k$	$= 9.784977$	$\log h$	$= 9.898294$

From the chart we find $5^{h.}\ 55^{m.}$, Washington mean time, as a first approximation to the time of beginning; but, for a nearer approximation, we find from the table (p. 392) for $5^{h.}\ 55^{m.}$

A	$= + 0.32410$	$\log E$	$= 9.999785$
B	$= + 0.61473$	$\log F$	$= 9.999637$
C	$= - 0.45850$	$\log G$	$= 8.502231$
A'	$= + 140.45$	$\log H$	$= 8.614338$
B'	$= + 77.95$	μ	$= 87^\circ\ 16'\ 27''.2$

Hence

$$\mu - \lambda = 41^\circ\ 52'\ 27''.2$$

$\log \cos(\mu - \lambda)$	9.871930	$\log \sin(\mu - \lambda)$	9.824450
$\log h \cos(\mu - \lambda)$	9.770224	$\log h \sin(\mu - \lambda)$	9.722744

$\log G h \cos(\mu - \lambda)$	8.272455	$\log H h \cos(\mu - \lambda)$	8.384562
$\log E k$	9.784762	$\log F k$	9.784614
$G h \cos(\mu - \lambda)$	0.01873	$H h \cos(\mu - \lambda)$	-0.02424
$E k$	-0.60920	$F k$	0.60900
B	0.61473	C	0.45850
b	0.02426	c	1.04326
$\log b$	8.384891	$h \sin(\mu - \lambda)$	0.52813
$\log c$	0.018393	A	0.32410
$\log m$	9.201642*n*	a	-0.20403
$\log \tan \frac{1}{2}\psi$	0.816751*n*	m	-0.15909
ψ	$162^\circ\ 40'$	$m - a$	0.04494
$\log \mu' h \cos(\mu - \lambda)$	1.63189	$\log G \mu' h \sin(\mu - \lambda)$	0.08664
$\mu' h \cos(\mu - \lambda)$	42.84	$G \mu' h \sin(\mu - \lambda)$	1.22
a'	97.61	b'	76.73
$a' + b' \cot \psi$	343.46	$\log b'$	1.88497
$\log 10^6 (m - a)$	4.65263	$\log \cot \psi$	0.50570
$\log (a' + b' \cot \psi)$	2.53588	$b' \cot \psi$	245.85
$\log t$	2.11675		

	h.	m.	s.
First approximation from chart	5	55	0.0
t, the correction		2	10.8
Washington mean time of beginning	5	57	10.8
Difference of longitude in time	3	1	36.0
San Francisco time of beginning	2	55	34.8

Another approximation will increase these times by $10^{s.}$, giving $2^{h.}\ 55^{m.}\ 44^{s.}.8$ as the correct San Francisco time; the corrected times always being used in making the successive approximations.

Occultations.—The pages 400 to 439 inclusive are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon.* These elements are given for all the stars, to the sixth magnitude inclusive, contained in the British Association Catalogue, which can be occulted by the moon during the year 1857.

The several columns of these pages contain, —1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction, 8. hourly variation p' of coördinate p; 9. hourly variation q' of coördinate q; 10. logarithmic sine of the star's declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, ☌, we have, at this time, $T =$ ☌, $h = H, p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T =$ ☌ $+ (t), h = H +$ sidereal equivalent of $(t), p = (t)\, p'$, and $q = Y + (t)\ q'$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of BESSEL, whose original paper on the subject may be found in SCHUMACHER'S *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1831, p. 257. The letters and numerals prefixed to the stars belonging to the group of the Pleiades, and the magnitudes of these stars, are taken from No. V. of BESSEL'S *Astronomische Untersuchungen.*

The process of computation is shown by the following equations:—

d = Longitude for Washington, of the place, + West, — East

ϕ = Geographical North Latitude of the place.

ϕ' = Geocentric North Latitude of the place.

r = Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \qquad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of BESSEL, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log. A	Log. B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$
$$r \cos \phi' = B \cos \phi$$

$$a = r \cos \phi' \sin (h - d)$$
$$b = r \cos \phi' \cos (h - d)$$

$$\log \lambda = 9.4192$$

$$u = a \qquad\qquad u' = b\,\lambda$$
$$v = r \sin \phi' \cos D - b \sin D \qquad\qquad v' = a\,\lambda \sin D$$

$$m \sin M = p - u \qquad\qquad n \sin N = p' - u'$$
$$m \cos M = q - v \qquad\qquad n \cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos \psi = \frac{m \sin (M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

Upper signs for Immersion; under signs for Emersion.

$$c \sin C = u + t\,u'$$
$$c \cos C = v + t\,v'$$

$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - d + t$$

Angle from *North Point* $= Q$
Angle from *Vertex* $= V$

The angle ψ is to be taken out positive and less than 180°. If $\log m \sin (M - N)$ be greater than $\log k$, $\cos \psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when $\log \cos \psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n} \cos (M - N),$$

which may give $\log m \sin (M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos \psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m \sin (M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m \sin (M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ, = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi \left(m \sin (M - N) - .2723\right),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180°.

The results obtained by the above equations are only approximate, yet the computed times of immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre, and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - d = h - d + \tfrac{1}{2}\,\mu,$$

u being the symbol by which we express the sidereal equivalent of t in these equations.

$$u' = r \cos \phi' \lambda \cos (h' - d)$$
$$v' = r \cos \phi' \lambda \sin (h' - d) \sin \mathrm{D}.$$

Then with these values of u' and v', recompute N, n, ψ, and t, by means of

$$n \sin N = p' - u'$$
$$n \cos N = q' - v'$$
$$\cos \psi = \frac{m \sin (M - N)}{k}$$
$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - d + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$u = r \cos \phi' \sin (h - d + \mu)$$
$$v = r \cos \phi' \cos D - r \cos \phi' \cos (h - d + \mu)$$

and we should have

$$(p + t\,p' - u)^2 + (q + t\,q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been corrrectly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t\,n \sin N)^2 + (m \cos M + t\,n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H, Y, etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as affected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$(t) = \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)}$$
$$T - d = ☌ - d + (t).$$

The elements corresponding to the time $T - d$ may then be obtained as follows:

$$h - d = H - d + (\mu)$$
$$p = (t)\,p'$$
$$q = Y + (t)\,q'$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting, beforehand, all those which may be visible at his station, by observing if his latitude be included between the ***limiting parallels*** for any given occultation, if the time ($T - d$) be favorable as regards the absence of daylight, and if the star's hour-angle ($h - d$) be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T - d = \delta - d + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)}$$

for every half-hour of ($H - d$) as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30°; and for all values of p', using two decimal figures, from 0.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$u = r \cos \phi' \sin (h - d)$$
$$u' = r \cos \phi' \lambda \cos (h - d)$$

which should be given for every minute (in time) of ($h - d$), from $0^{\text{h.}}$ to $6^{\text{h.}}$. If ($h - d$) exceeds $6^{\text{h.}}$, the argument will be $12^{\text{h.}} - (h - d)$, instead of ($h - d$). It will be seen by the equations that u will have the same sign as $\sin (h - d)$, and that u' will have the same sign as $\cos (h - d)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30°.

For a practical application of the preceding formulas, we will make the calculations for an occultation of the star 37 Leonis, January 12th, 1857, as it will appear at Fort Nisqually, Oregon, in north latitude 47° 7′.5 $= \phi$, and west longitude from Washington $3^{\text{h.}}\ 3^{\text{m.}}\ 27^{\text{s.}} = d$. The data for the computation are given on page 401, and, with the latitude and longitude of the place, are as follows: —

January 12. 37 Leonis, 6.

	° ′		h. m. s.		
ϕ	+ 47 7.5	H	— 0 16 47	p'	0.5178
	h. m.	d	+ 3 3 27	q'	— 0.2354
d	+ 3 3.4	$H - d$	— 3 20 14	log sin D	+ 9.3968
δ	14 22.1	Y	+ 0.4980	log cos D	+ 9.9861
$\delta - d$	11 18.7				

Calculation of the time, $T - d$, and reduction of the elements of computation.

	log p' + 9.714		h.
	log sec ϕ + 0.167		(t) — 1.3
			h. m. s.
log p' sec ϕ =	log (1) + 9.881	(Reduced to hours and minutes)	(t) — 1 18
	log constant 9.403		(μ) — 1 18 13
	log cos $(H - d)$ + 9.807		$H - d$ — 3 20 14
log [9.403] cos $(H - d)$ =	log (2) + 9.210	$H - d + (\mu)$ =	$h - d$ — 4 38 27
	(2) .162		$\delta - d$ 11 18.7
	(1) .760	$\delta - d + (t)$ =	$T - d$ 10 0.7
(1) — (2) =	(3) .598	$(t)\, p' = - 1.3 \times 0.5178$ =	p — .6731
	log (3) + 9.777	$(t)\, q' = - 1.3 \times - 0.2354$ =	$t\, q'$ + .3060
	log sin $(H - d)$ — 9.884		Y + .4980
log $\frac{\sin (H - d)}{(3)}$ =	log (t) — 0.107	$Y + t\, q'$ =	q + .8040

Calculation of the times of *Immersion* and *Emersion*, etc.

(Table, page 502, Arg. ϕ)	$\log A$	9.9978
	$\log \sin \phi$	+9.8651
$\log A \sin \phi =$	$\log r \sin \phi$	+9.8629
	$\log \cos D$	+9.9861
	$\log r \sin \phi' \cos D$	+9.8490
(Table, page 502, Arg. ϕ)	$\log B$	0.0008
	$\log \cos \phi$	+9.8327
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8335
	$\log \sin (h - d)$	−9.9719
$\log r \cos \phi' \sin (h - d) =$	$\log u = \log a$	−9.8054
	$\log \cos (h - d)$	+9.5420
$\log r \cos \phi' \cos (h - d) =$	$\log b$	+9.3755
	$\log \lambda$	9.4192
	$\log a \lambda$	−9.2246
	$\log \sin D$	+9.3968
	$\log b \sin D$	+8.7723
$\log a \lambda \sin D =$	$\log v'$	−8.6214
$\log b \lambda =$	$\log u'$	+8.7947
	$r \sin \phi' \cos D$	+ .7063
	$b \sin D$	+ .0592
$r \sin \phi \ \cos D - b \sin D =$	v	+ .6471
	q	+ .8040
$q - v =$	$m \cos M$	+ .1569
	p	− .6731
	u	− .6389
$p - u =$	$m \sin M$	− .0342
	q'	− .2354
	v'	− .0418
$q' - v' =$	$n \cos N$	− .1936
	p'	+ .5178
	u'	+ .0623
$p' - u' =$	$n \sin N$	+ .4555

		°	′
	M	347	42
	N	113	2
	$M - N$	234	40
	$90^\circ - N$	336	58
	ψ	118	46
For Immersion, $90^\circ - N - \psi =$	Q	218	12

	$\log m \sin M$	−8.5340
	$\log m \cos M$	+9.1956
	$\log \tan M$	−9.3384
	$\log \cos M$	+9.9899
	$\log m$	+9.2057
	$\log n \sin N$	+9.6585
	$\log n \cos N$	−9.2869
	$\log \tan N$	−0.3716
	$\log \sin N$	+9.9639
	$\log n$	+9.6946
	$-\log \frac{m}{n}$	−9.5111
	$\log \cos (M - N)$	−9.7622
$-\log \frac{m}{n} \cos (M - N) =$	$\log (1)$	+9.2733
	$\log k$	9.4350
	$\log \frac{m}{k}$	+9.7707
	$\log \sin (M - N)$	−9.9116
$\log \frac{m}{k} \sin (M - N) =$	$\log \cos \psi$	−9.6823
	$\log \sin \psi$	+9.9428
	$\log k \sin \psi$	+9.3778
$\log \frac{k \sin \psi}{n} =$	$\log (2)$	+9.6832
	(1)	+ .1874
	(2)	+ .4821
For Immersion, (1) − (2) =	t_1	− .2947
For Emersion, (1) + (2) =	t_2	+ .6695
	$\log t_1$	−9.4694
	$\log u'$	+8.7947
	$\log t_1 u'$	−8.2641
	$\log v'$	−8.6214
	$\log t v'$	+8.0908
	$t_1 v'$	+ .0123
	v	+ .6478
$v + t_1 v' =$	$c \cos C$	+ .6601
	$t_1 u'$	− .0184
	u	− .6389
$u + t_1 u' =$	$c \sin C$	− .6573
	$\log c \sin C$	−9.8178
	$\log c \cos C$	+9.8196
	$\log \tan C$	−9.9982

		h.	m.
	$T - d$	10	0.7
	t_1 —		17.7
Immersion: *Fort Nisqually Mean Time*, ...	$T - d + t_1$	9	43.0

		°	′
	C —	44	53
Immersion *Angle from North Point* = ...	Q	218	12
Immersion *Angle from Vertex* = $Q + C$ = ...	V	173	19

		h.	m.
	t_2 +	0	40.2
Emersion: *Fort Nisqually Mean Time*, ...	$T - d + t_2$	10	40.9

Calculation of a more accurate time, etc., of *Emersion.*

	$\log \cos (h' - d)$	$+9.6328$
	$\log r \cos \phi'$	$+9.8335$
	$\log \lambda$	9.4192
$\log r \cos \phi' \lambda \cos (h' - d) =$	$\log u'$	$+8.8855$
	$\log \sin (h' - d)$	-9.9558
	$\log r \cos \phi' \lambda$	$+9.2527$
	$\log \sin D$	$+9.3968$
$\log r \cos \phi' \lambda \sin (h' - d) \sin D =$	$\log v'$	-8.6053
	$\log n \sin N$	$+9.6444$
	$\log n \cos N$	-9.2902
	$\log \tan N$	-0.3542
	$\log \sin N$	$+9.9612$
	$\log n$	$+9.6832$
From first determination,	$\log m$	$+9.2057$
	$-\log \frac{m}{n}$	-9.5225
	$\log \cos (M - N)$	-9.7710
	$\log \sin (M - N)$	-9.9070
From first determination,	$\log \frac{m}{k}$	$+9.7707$
$\log \frac{m}{k} \sin (M - N) =$	$\log \cos \psi$	-9.6777
	$\log \sin \psi$	$+9.9442$
	$\log k$	9.4350
	$\log k \sin \psi$	$+9.3792$
$\log \frac{k \sin \psi}{n} =$	$\log (2)$	$+9.6960$
$-\log \frac{m}{n} \cos (M - N) =$	$\log (1)$	$+9.2935$
	(1)	$+ .1965$
	(2)	$+ .4966$
$(1) + (2) =$	t	$+ .6935$

		°	'
From first determination,	M	347	42
	N	113	52
	$M - N$	233	50
	$90° - N$	336	8
	ψ	118	26
For Emersion, $90° - N + \psi =$	Q	94	36

		h. m. s.
	$h - d$	-4 38 27
Sid. equiv. for $\frac{1}{2} t_2 =$	$\frac{1}{2} \mu +$	20 8
$h - d + \frac{1}{2} \mu =$	$h' - d$	-4 18 19
	$q' -$	.2354
	$v' -$	.0403
$q' - v' =$	$n \cos N -$	.1951
	$p' +$	.5178
	$u' +$	.0768
$p' - u' =$	$n \sin N +$	.4410
	$\log t +$	9.8408
	$\log n \sin N +$	9.6444
	$\log n t \sin N +$	9.4852
	$\log n \cos N -$	9.2902
	$\log n t \cos N -$	9.1310
	$n t \cos N -$	.1352
From first determination,	$m \cos M +$	.1569
$m \cos M + n t \cos N =$	(3)	.0217
	$n t \sin N +$	.3056
From first determination,	$m \sin M -$	.0342
$m \sin M + n t \sin N =$	(4)	.2714
	$(4)^2$	.0737
	$(3)^2$	.0005
$(3)^2 + (4)^2 = k^2 = 0.0741,$	Check	.0742
	$\log u' +$	8.8855
	$\log t u' +$	8.7263
	$\log v' -$	8.6053
	$\log t v' -$	8.4461
	$t v' -$	.0279
From first determination,	$v +$	.6471
$v + t v' =$	$c \cos C +$	.6192
	$t u' +$	.0532
From first determination,	$u -$	.6389
$u + t u' =$	$c \sin C -$	.5857
	$\log c \sin C -$	9.7677
	$\log c \cos C +$	9.7918
	$\log \tan C -$	9.9759

		h.	m.
	$T - d$	10	0.7
(Reduced to hours and minutes),	$t +$		41.6
EMERSION: *Fort Nisqually Mean Time*, ...	$T - d + t$	10	42.3

		°	'
	$C -$	43	25
Emersion *Angle from North Point* = ...	Q	94	36
Emersion *Angle from Vertex* = $Q + C$ = ...	V	51	11

The last four pages of the Occultations contain a list of such Occultations as will be visible at Washington, during the year 1857.

The Tables of *Jupiter's Satellites* embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangular coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

x is positive after superior conjunction, or on the east side of the planet, negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a W. placed after the name of the phase.

The *Appendix* contains an article on the construction of this work, similar to that of the preceding year. It will be seen that the elements of the orbit of Saturn have been somewhat modified by PEIRCE; that PETERS' formula for the ephemeris of Sirius, embracing its oscillations in Right Ascension, has been adopted.

It also contains tables of reduction from the equator to the ecliptic, and the reverse; a general table for the Libration of the Moon, constructed by means of the formulas on page 330, and furnishing the values to be employed in the computation of the moon's libration in latitude and longitude (see page 330); a table showing the moon's mean motion in longitude for sidereal intervals of time, carried out to tenths of minutes. The table showing the correction required on account of second differences in the moon's motion, the use of which is explained in the preceding part of this article, page 497, is comprised in the tables which form part of Professor CHAUVENET's *Lunar Method;* as is also the table of logarithms of small arcs in space and time. The table for converting mean solar into sidereal time, and the reverse, accompanies CHAUVENET's *Method by Equal Altitudes.* Both of these *Methods* are given in full in this volume.

The logarithms of the LE VERRIER Coefficients of the Perturbative Function, computed by the late SEARS C. WALKER, are also added.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1857.

The Precession of the Equinoxes adopted in this volume is taken from Struve and Peters;[*] it is,

$$\text{Precession} = 50''.2411 + 0''.0002268\, t,$$

in which t is the number of years after 1800.

The Mean Obliquity of the Ecliptic is also taken from Struve and Peters, and its value is,[†]

$$\text{Obliquity} = 23^\circ\ 27'\ 54''.22 - 0''.4645\, t - 0''.0000014\, t^2.$$

The constant of aberration is that of Struve, and is,[‡]

$$\text{Aberration} = 20''.4451 \pm 0''.0111.$$

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from Peters' formulas given in his *Numerus Constans Nutationis.*[§] These formulas are reprinted in the volume of this ephemeris for 1855.

The Mean Places of the Fixed Stars are taken from the list of stars in the *English Nautical Almanac* for 1855, combined with that given in the *Astronomical Observations made during the Year* 1846 *at the National Observatory, Washington.*

The Apparent Places of the Fixed Stars have been obtained by means of a set of tables constructed and printed in the office of this work, from the transformation of Peters' formulas,[‖] which are given in the *Construction of the Almanac for* 1855.

The place of Sirius is corrected by the following formula, given by Peters, for the variability of its motion in right ascension compared with those of β Orionis, α Orionis, and Procyon.

$$\text{Variation of right ascension} = 0^s.101 + 0^s.00072\, t + 0^s.170\ \text{sin.}\ (u + 92^\circ\ 18');$$

in which

---

[*] Peters' *Numerus Constans Nutationis*, p. 71.

[†] Ibid., pp. 66 and 71.

[‡] Struve's *Constant de l'Aberration*, p. 47.

[§] Peters' *Numerus Constans Nutationis*, pp. 46 – 48.

[‖] Ibid., pp. 73, 74.

APPENDIX.

u = the eccentric anomaly from the inferior apsis. It is found from the elements,

Mean annual motion of Sirius in its orbit	= 7°.3104	± 0°.2162
Period of its revolution	= 49^y.245	± 1^y.456
Passage through the inferior apsis	= 1792.819	± 2^y.039
Eccentricity	= 0.5647	± 0.0827.

The List of Moon-culminating Stars is enlarged, and so arranged in a more systematic form as to permit the observer a greater range for selection.

The Ephemeris of the Sun is constructed from Carlini's tables with Bessel's improvements. In the computation of the Sun's Geocentric Coördinates, regard has been had to the sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac for* 1855.

Encke's discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von* 1769, &c., has furnished the standard

Equatorial Horizontal Parallax at the Earth's Mean Distance = 8″.5776.

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to 16′ 2″.

For reducing observations of different observers, the following corrections may be added: —

		s.
For Greenwich Mural Circle,	H.	+ 0.21
" " " "	H. B.	— 0.43
" " " "	F.	— 0.86
" " " "	E.	+ 0.17
" " " "	R.	— 0.57
" " " "	G.	— 0.18
" " " "	I. H.	— 0.87
" " " "	D.	— 0.61
" " " "	W. R.	+ 0.49
" " " "	P.	— 1.28
Königsberg Meridian Circle,	Bessel	— 1.10
Dorpat " "	W. Struve	— 1.36
Washington Mural Circle,	Prof. Coffin	+ 1.00
" " "	Lieut. Page	+ 1.00
Washington Meridian Circle,	Prof. Hubbard	— 0.41

The Ephemeris of the Moon has been constructed from Peirce's *Tables of the Moon*, constructed and printed for the use of the Nautical Almanac.

A separate volume of *Tables of the Moon's Parallax*, constructed from Walker's and Adams' formulas, and arranged as a Supplement to the first edition of Peirce's *Tables of the Moon*, has been printed and used in the preparation of this volume.

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{500}$ part greater than that given by Burckhardt, although that given by Burckhardt is probably better adapted to the computation of eclipses and occultations.

CONSTRUCTION OF THE ALMANAC.

The Ephemeris of Mercury has been constructed from the theory of Le Verrier, published in the *Additions* to the *Connaissance des Temps* for 1848, without any alteration. Manuscript Tables have been computed from Le Verrier's formulas for this purpose, by Professor Winlock.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from Lindenau's Tables, in a form similar to that adopted for the Lunar Tables; applying Airy's Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. Hugh Breen's results contained in his paper on the *Corrections of* Lindenau's *Elements of the Orbit of Venus*, &c., published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from Le Verrier's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844.

The following are the corresponding corrections of the elements for 1857: —

corr. mean long. for Jan. 1, 1857 = $-1''.4$
corr. mean motion = $-0''.052$
corr. eccentricity = $+0.00003823$
corr. long. of per. = $+415.3$
corr. long. of node = $+75.4$
corr. inclination = $+2''.3$.

The Ephemeris of Mars is derived from manuscript Tables constructed from Lindenau's Tables in the same manner as the Tables of Venus. Mr. Hugh Breen's results contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted.

The following are the corresponding corrections of the elements for 1857: —

corr. mean distance = -0.000004531
corr. mean motion = $+0''.04795$
corr. mean long. for Jan. 1, 1857 = $+4''.93$
corr. eccentricity = $+0.000005682$
corr. long. of per. = $+7''.15$
corr. long. of node = $+207''.2$
corr. inclination = $-4''.0$.

The Ephemeris of Jupiter is derived from manuscript Tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of Bouvard, with changes having the same object. The mass of Jupiter given by Bessel has been adopted and used.

This mass = $\frac{1}{1047.879 \pm 0.235}$ of the sun's mass.

The following corrections of the elements have also been introduced for 1857: —

corr. mean long. for Jan. 1, 1857 = +4″.9
corr. long. of node = —143″.4
corr. inclination = —5″.7.

The Ephemeris of Uranus is derived from the elliptical portion of Bouvard's Tables, with Le Verrier's corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel* (*dite Uranus*), published in the *Connaissance des Temps* for 1849, and also Peirce's corrections and perturbations arising from the influence of Neptune.

The combined corrections of the elements deduced by Peirce for January 1, 1800, are as follows: —

corr. mean distance = +0.000942
corr. mean motion = —1.″13560
corr. eccentricity = —0.0003626
corr. long. of per. = +8252″.4
corr. long. of epoch = +2575.″4.

The Ephemeris of Neptune is derived from Peirce's theory and Walker's orbit.

The eclipses and elongations of Jupiter's Satellites are computed from Damoiseau's Tables.

The vertical semidiameters of the Planets are computed from the following values: —

	Vertical Semidiameter.	Log. Dist.	Authority
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury*.
Venus	8.546 ± 0″.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars	2.842 ± 0.057	0.25	
Jupiter	18.78 ± 0.067	0.70	
Saturn	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by a constant quantity = 0″.57.

The apparent elements of Saturn's Rings are computed from Bessel's data, except those for Bond's dusky ring.

The elements of the eclipse are adapted to the neat and simple modification of Bessel's formulas, suggested by T. Henry Safford, Jr.

The elements adapted to Bessel's formulas are given for all occultations of stars greater than those of the sixth magnitude.

The Heliocentric Coördinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity: —

Mercury	$\frac{1}{4865751}$	Encke, *A. N.*, No. 443.
Venus	$\frac{1}{390000}$	Le Verrier, *Théor. de Merc.*, p. 115.

CONSTRUCTION OF THE ALMANAC.

The Earth	$\frac{1}{354936}$	Le Verrier, *Théor. de Merc.*, p. 26.
Mars	$\frac{1}{2680637}$	Burckhardt, *Conn. des Temps*, 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.235}$	Bessel, *Der Masse des Jupiter*, p. 64.
Saturn	$\frac{1}{3501.6}$	Bessel, *Comptes Rendus*, 1841.
Uranus	$\frac{1}{24905}$	Lamont, *Mem. Ast. Soc.*, Vol. XI. p. 54.
Neptune	$\frac{1}{18780}$	Peirce, *Am. Ac. Proc.*, Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the stereotype plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

The principal computations of the Ephemeris have been distributed in the following manner.

The Sun has been computed by Professor Winlock. The Moon, with the Culminations and Lunar Distances, has been divided between Mr. Runkle, Mr. Bradford, Mr. Kerr, and Mr. Wright. Mercury has been computed by Professor Winlock, Venus by Miss Mitchell, Mars by Professor Hedrick, Jupiter by Professor Kendall, Saturn by Professor Van Vleck, Uranus by Professor Hedrick, and Neptune by Professor Kendall. The Fixed Stars have been computed by Mr. Sprague, the General Constants for Reduction by Professor Peirce, and the Occultations by Mr. Downes. The Eclipses have been computed by Mr. Wright and Mr. Kerr. The Table of Geographical Positions of the Principal Observatories has been prepared by Dr. B. A. Gould.

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

k	*k*	*A*	*a*	Diff.	Log. *a*	Diff.	*b*	Log. *b*	*B*	Diff.	*k*	*k*
°	h. m.	° ′							° ′		h. m.	°
0	0 0	0 0.0	0.3981	1	9.6000	1	0.9173	9.9625	0 0.0	26.0	12 0	180
1	0 4	0 5.4	0.3980	2	9.5999	2	0.9174	9.9626	0 26.0	26.1	11 56	179
2	0 8	0 10.8	0.3978	3	9.5997	3	0.9175	9.9626	0 52.1	26.0	11 52	178
3	0 12	0 16.2	0.3975	4	9.5994	5	0.9176	9.9627	1 18.1	25.9	11 48	177
4	0 16	0 21.5	0.3971	5	9.5989	6	0.9178	9.9627	1 44.0	25.9	11 44	176
5	0 20	0 26.9	0.3966	7	9.5983	7	0.9180	9.9628	2 9.9	25.9	11 40	175
6	0 24	0 32.2	0.3959	8	9.5976	9	0.9183	9.9630	2 35.8	25.8	11 36	174
7	0 28	0 37.4	0.3951	9	9.5967	10	0.9186	9.9631	3 1.6	25.8	11 32	173
8	0 32	0 42.6	0.3942	10	9.5957	11	0.9190	9.9633	3 27.4	25.6	11 28	172
9	0 36	0 47.7	0.3932	13	9.5946	13	0.9195	9.9635	3 53.0	25.6	11 24	171
10	0 40	0 52.8	0.3920	13	9.5933	14	0.9200	9.9638	4 18.6	25.4	11 20	170
11	0 44	0 57.8	0.3907	13	9.5919	15	0.9205	9.9640	4 44.0	25.3	11 16	169
12	0 48	1 2.7	0.3894	15	9.5904	17	0.9211	9.9643	5 9.3	25.2	11 12	168
13	0 52	1 7.5	0.3879	16	9.5887	18	0.9217	9.9646	5 34.5	25.1	11 8	167
14	0 56	1 12.8	0.3863	17	9.5869	20	0.9224	9.9649	5 59.6	24.9	11 4	166
15	1 0	1 17.0	0.3846	19	9.5849	21	0.9231	9.9652	6 24.5	24.8	11 0	165
16	1 4	1 21.5	0.3827	20	9.5828	22	0.9239	9.9656	6 49.3	24.6	10 56	164
17	1 8	1 25.9	0.3807	21	9.5806	24	0.9247	9.9660	7 13.9	24.4	10 52	163
18	1 12	1 30.2	0.3786	22	9.5782	25	0.9256	9.9664	7 38.3	24.2	10 48	162
19	1 16	1 34.4	0.3764	23	9.5757	27	0.9265	9.9668	8 2.5	24.0	10 44	161
20	1 20	1 38.5	0.3741	24	9.5730	29	0.9274	9.9673	8 26.5	23.9	10 40	160
21	1 24	1 42.4	0.3717	26	9.5701	30	0.9284	9.9677	8 50.4	23.6	10 36	159
22	1 28	1 46.2	0.3691	27	9.5671	31	0.9294	9.9682	9 14.0	23.4	10 32	158
23	1 32	1 49.9	0.3664	27	9.5640	33	0.9304	9.9687	9 37.4	23.2	10 28	157
24	1 36	1 53.4	0.3637	29	9.5607	35	0.9315	9.9692	10 0.6	22.9	10 24	156
25	1 40	1 56.7	0.3608	30	9.5572	36	0.9326	9.9697	10 23.5	22.7	10 20	155
26	1 44	1 59.9	0.3578	31	9.5536	38	0.9338	9.9703	10 46.2	22.5	10 16	154
27	1 48	2 2.9	0.3547	32	9.5498	39	0.9350	9.9708	11 8.7	22.2	10 12	153
28	1 52	2 5.8	0.3515	33	9.5459	41	0.9362	9.9714	11 30.9	21.9	10 8	152
29	1 56	2 8.5	0.3482	34	9.5418	43	0.9374	9.9719	11 52.8	21.7	10 4	151
30	2 0	2 11.1	0.3448	35	9.5375	45	0.9387	9.9725	12 14.5	21.4	10 0	150
31	2 4	2 13.5	0.3413	37	9.5330	46	0.9400	9.9731	12 35.9	21.1	9 56	149
32	2 8	2 15.7	0.3376	38	9.5284	48	0.9413	9.9737	12 57.0	20.8	9 52	148
33	2 12	2 17.7	0.3338	38	9.5236	51	0.9426	9.9743	13 17.8	20.6	9 48	147
34	2 16	2 19.6	0.3300	39	9.5185	52	0.9440	9.9750	13 38.4	20.2	9 44	146
35	2 20	2 21.3	0.3261	40	9.5133	54	0.9453	9.9756	13 58.6	20.0	9 40	145
36	2 24	2 22.8	0.3221	41	9.5079	56	0.9467	9.9762	14 18.6	19.6	9 36	144
37	2 28	2 24.1	0.3180	43	9.5023	58	0.9481	9.9768	14 38.2	19.3	9 32	143
38	2 32	2 25.2	0.3137	44	9.4965	60	0.9495	9.9775	14 57.5	19.0	9 28	142
39	2 36	2 26.2	0.3093	44	9.4905	63	0.9509	9.9781	15 16.5	18.6	9 29	141
40	2 40	2 27.0	0.3049	45	9.4842	65	0.9524	9.9788	15 35.1	18.4	9 20	140
41	2 44	2 27.6	0.3004	46	9.4777	67	0.9538	9.9794	15 53.5	18.0	9 16	139
42	2 48	2 28.0	0.2958	47	9.4710	69	0.9552	9.9801	16 11.5	17.7	9 12	138
43	2 52	2 28.2	0.2911	47	9.4641	72	0.9566	9.9807	16 29.2	17.3	9 8	137
44	2 56	2 28.2	0.2864	49	9.4569	74	0.9581	9.9814	16 46.5	17.0	9 4	136
45	3 0	2 28.1	0.2815	50	9.4495	78	0.9595	9.9820	17 3.5	16.7	9 0	135
46	3 4	2 27.8	0.2765	50	9.4417	80	0.9610	9.9827	17 20.2	16.3	8 56	134
47	3 8	2 27.3	0.2715	51	9.4337	82	0.9625	9.9834	17 36.5	15.9	8 52	133
48	3 12	2 26.6	0.2664	52	9.4255	86	0.9639	9.9840	17 52.4	15.6	8 48	132
49	3 16	2 25.8	0.2612	53	9.4169	89	0.9653	9.9847	18 8.0	15.3	8 44	131
50	3 20	2 24.8	0.2559	54	9.4080	92	0.9667	9.9853	18 23.3	14.9	8 40	130
51	3 24	2 23.6	0.2505	54	9.3988	95	0.9681	9.9859	18 38.2	14.5	8 36	129
52	3 28	2 22.2	0.2451	55	9.3893	99	0.9695	9.9865	18 52.7	14.2	8 32	128
53	3 32	2 20.7	0.2396	56	9.3794	102	0.9709	9.9872	19 6.9	13.8	8 28	127
54	3 36	2 19.0	0.2340	57	9.3692	106	0.9722	9.9878	19 20.7	13.4	8 24	126
55	3 40	2 17.1	0.2283	57	9.3586	111	0.9736	9.9884	19 34.1	13.1	8 20	125

EQUATOR TO ECLIPTIC.

TABLE FOR CHANGING LATITUDE AND LONGITUDE TO RIGHT ASCENSION AND DECLINATION, OR THE REVERSE.

k	k	A	a	Diff.	Log. a	Diff.	b	Log. b	B	Diff.	k	k
°	h. m.	° ′							° ′		h. m.	°
56	3 44	2 15.1	0.2226	58	9.3475	114	0.9749	9.9890	19 47.2	12.7	8 16	124
57	3 48	2 13.0	0.2168	59	9.3361	119	0.9762	9.9895	19 59.9	12.3	8 11	123
58	3 52	2 10.7	0.2109	59	9.3242	124	0.9775	9.9901	20 12.2	12.0	8 8	122
59	3 56	2 8.2	0.2050	60	9.3118	129	0.9788	9.9907	20 24.2	11.6	8 4	121
60	4 0	2 5.6	0.1990	60	9.2989	134	0.9800	9.9912	20 35.8	11.2	8 0	120
61	4 4	2 2.8	0.1930	61	9.2855	139	0.9812	9.9918	20 47.0	10.9	7 56	119
62	4 8	1 59.9	0.1896	62	9.2716	146	0.9824	9.9923	20 57.9	10.4	7 52	118
63	4 12	1 56.9	0.1807	62	9.2570	152	0.9836	9.9928	21 8.3	10.1	7 48	117
64	4 16	1 53.7	0.1745	63	9.2418	159	0.9847	9.9933	21 18.4	9.7	7 44	116
65	4 20	1 50.4	0.1682	63	9.2259	166	0.9858	9.9938	21 28.1	9.4	7 40	115
66	4 24	1 47.0	0.1619	64	9.2093	175	0.9868	9.9942	21 37.5	8.9	7 36	114
67	4 28	1 43.5	0.1555	64	9.1918	183	0.9878	9.9947	21 46.4	8.6	7 32	113
68	4 32	1 39.8	0.1491	64	9.1735	192	0.9888	9.9951	21 55.0	8.2	7 28	112
69	4 36	1 36.1	0.1427	65	9.1543	203	0.9898	9.9955	22 3.2	7.9	7 24	111
70	4 40	1 32.2	0.1362	66	9.1340	214	0.9907	9.9959	22 11.1	7.4	7 20	110
71	4 44	1 28.2	0.1296	66	9.1126	227	0.9916	9.9963	22 18.5	7.1	7 16	109
72	4 48	1 24.2	0.1230	66	9.0899	240	0.9924	9.9967	22 25.6	6.7	7 12	108
73	4 52	1 20.0	0.1164	67	9.0659	256	0.9932	9.9970	22 32.3	6.3	7 8	107
74	4 56	1 15.7	0.1097	67	9.0403	273	0.9940	9.9974	22 38.6	5.9	7 4	106
75	5 0	1 11.4	0.1030	67	9.0130	294	0.9947	9.9977	22 44.5	5.6	7 0	105
76	5 4	1 7.0	0.0963	67	8.9836	315	0.9954	9.9980	22 50.1	5.1	6 56	104
77	5 8	1 2.5	0.0896	68	8.9521	342	0.9960	9.9982	22 55.2	4.8	6 52	103
78	5 12	0 58.0	0.0828	68	8.9179	373	0.9966	9.9985	23 0.0	4.4	6 48	102
79	5 16	0 53.4	0.0760	69	8.8806	410	0.9971	9.9987	23 4.4	4.0	6 41	101
80	5 20	0 48.7	0.0696	68	8.8396	453	0.9976	9.9990	23 8.4	3.6	6 40	100
81	5 24	0 44.0	0.0623	69	8.7943	508	0.9981	9.9992	23 12.0	3.3	6 36	99
82	5 28	0 39.2	0.0554	69	8.7435	576	0.9985	9.9993	23 15.3	2.8	6 32	98
83	5 32	0 34.4	0.0485	69	8.6859	667	0.9988	9.9995	23 18.1	2.5	6 28	97
84	5 36	0 29.6	0.0416	69	8.6192	789	0.9991	9.9996	23 20.6	2.1	6 24	96
85	5 40	0 24.7	0.0347	69	8.5403	967	0.9994	9.9997	23 22.7	1.7	6 20	95
86	5 44	0 19.8	0.0278	69	8.4436	1248	0.9996	9.9998	23 24.4	1.3	6 16	94
87	5 48	0 14.9	0.0209	70	8.3188	1760	0.9998	9.9999	23 25.7	1.0	6 12	93
88	5 52	0 9.9	0.0139	69	8.1428	3010	0.9999	0.0000	23 26.7	0.6	6 8	92
89	5 56	0 5.0	0.0070	70	7.8418		1.0000	0.0000	23 27.3	0.2	6 4	91
90	6 0	0 0.0	0.0000				1.0000	0.0000	23 27.5		6 0	90

This table is computed for an obliquity of 23° 27′ 30.

The argument k is either the longitude or the right ascension, or their excess above 180° or $12^{\text{h.}}$

Right ascension (α) and declination (δ) are converted into longitude (λ) and latitude (β) by the formulæ

$$k = \alpha \text{ or } = \alpha - 12^{\text{h.}}$$
$$\tan.\, p = a \tan.\, (\delta - B)$$
$$\tan.\, \beta = b \tan.\, (\delta - B) \cos.\, p$$
$$\lambda = \alpha + A + p$$

in which the sign of a is that of cos. α
the sign of B is that of sin. α
the sign of A is that of tan. α

Longitude (λ) and latitude (β) are converted into right ascension and declination by the formulæ

$$k = \lambda = \quad = \lambda - 180^\circ$$
$$\tan.\, g = a \tan.\, (\beta + B)$$
$$\tan.\, \delta = b \tan.\, (\beta + B) \cos.\, g$$
$$\alpha = \lambda + A - g$$

in which the sign of a is that of cos. λ
the sign of B is that of sin. λ
the sign of A is that of tan. λ

The following approximate formulæ can be used when β is less than 10°.

$$\beta = b\ (\delta - B)$$
$$\lambda = \alpha + A + a\ (\delta - B) \sec.\, \beta$$

and the factor sec. β can be neglected when β is less than 4°.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.

☊—λ	Δλ	a	B	☊—λ	☊—λ	Δλ	a	B	☊—λ
°	′		° ′	°	°	′		° ′	°
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

Δλ has the sign of tan. (☊ — λ)
a **has the sign of cos. (☊ — λ)**
B **has the sign of sin. (☊ — λ)**

When ☊ — λ exceeds 180° the table is to be entered with (☊ — λ) — 180° as the argument in the column ☊ — λ.

MOON'S MEAN MOTION.

MOON'S MEAN MOTION IN LONGITUDE FOR SIDEREAL INTERVALS.

Day.	☾'s Motion in Longitude.	Minutes.	☾'s Motion in Longitude.	Minutes.	☾'s Motion in Longitude.
	° ′		′		′
				30	16.4
1	13 8.4	1	0.5	31	17.0
2	26 16.9	2	1.1	32	17.5
3	39 25.3	3	1.6	33	18.1
4	52 33.7	4	2.2	34	18.6
5	65 42.1	5	2.7	35	19.2
6	78 50.6	6	3.3	36	19.7
7	91 59.0	7	3.8	37	20.3
8	105 7.4	8	4.4	38	20.8
9	118 15.8	9	4.9	39	21.4
10	131 24.3	10	5.5	40	21.9
Hour.		11	6.0	41	22.4
		12	6.6	42	23.0
1	0 32.9	13	7.1	43	23.5
2	1 5.7	14	7.7	44	24.1
3	1 38.6	15	8.2	45	24.6
4	2 11.3	16	8.8	46	25.2
5	2 44.3	17	9.3	47	25.7
6	3 17.1	18	9.9	48	26.3
7	3 50.0	19	10.4	49	26.8
8	4 22.8	20	11.0	50	27.4
9	4 55.7	21	11.5	51	27.9
10	5 28.5	22	12.0	52	28.5
11	6 1.4	23	12.5	53	29.0
12	6 34.2	24	13.1	54	29.6
13	7 7.1	25	13.6	55	30.1
14	7 39.9	26	14.2	56	30.7
15	8 12.8	27	14.7	57	31.2
16	8 45.6	28	15.3	58	31.8
17	9 18.5	29	15.9	59	32.3
18	9 51.3	30	16.4	60	32.9
				Seconds.	′
19	10 24.2			10	0.1
20	10 57.0			20	0.2
21	11 29.9			30	0.3
22	12 2.7			40	0.4
23	12 35.6			50	0.5
24	13 8.4			60	0.5

CHAUVENET'S

TABLES FOR CORRECTING LUNAR DISTANCES,

WITH

DIRECTIONS FOR USING THE TABLES,

AND

EXPLANATION OF THEIR CONSTRUCTION, &c.

66 11

DIRECTIONS

FOR USING

THE TABLES FOR CORRECTING LUNAR DISTANCES.

The object of these Tables is to give the *true* correction of a lunar distance in all cases when, with the apparent distance of the moon from the sun, a planet, or star, the apparent altitudes of the two objects have also been obtained by observation. They enable us readily to take into account, — 1st, the parallax of the moon in the latitude of the observer, allowing for the spheroidal figure of the earth; 2d, the parallax of the sun or a planet; 3d, the true atmospheric refraction, allowing for the actual state of the air as shown by the barometer and thermometer; and 4th, that effect of refraction which gives the apparent discs of the moon and sun an oval or elliptical figure.

The longitude deduced from a lunar observation, when no attention is paid to the spheroidal figure of the earth, to the barometer and thermometer, and the elliptical figure of the discs, may in certain cases be in error *a whole degree.* It is true these extreme cases are rare in practice; but cases are common in which from such neglect the error in the longitude is 10′, 15′, or 20′. Since lunars are now chiefly valuable as checks upon the chronometer, it is absolutely necessary to get rid of such errors, and to leave no other inaccuracy in the result than that which unavoidably follows from the observations. This is accomplished by means of these Tables, with an amount of labor very little greater than that which is required by the inaccurate methods in common use.

The Observation.

The record of a *complete* observation embraces, —

1. The latitude and approximate longitude of the place of observation.
2. The approximate local time.
3. The time of observation as shown by a chronometer, and the error of the chronometer, or its difference from mean Greenwich time.
4. The apparent distance of the moon's bright limb from a star or planet, or from the nearest limb of the sun.
5. The apparent altitude of the moon's upper or lower limb above the sea horizon.
6. The apparent altitude of the star, planet, or lower limb of the sun above the sea horizon.

7. The height of the barometer and thermometer.
8. The height of the eye above the level of the sea.
9. The index correction of the sextant, if a sextant is used.

The index correction of the sextant may be supposed to be previously determined; but, since even in the best instruments it is not constant, its determination should be considered a necessary part of the observation; and when the greatest precision is sought, it should be found both before and after the measurement of the distance, and its mean value taken.

The error of the chronometer above alluded to is that which is obtained by applying the daily rate (multiplied by the proper number of days) to the error found before leaving port. The agreement or disagreement of the error thus found with that found by the lunar observation will be the test of the good or bad going of the chronometer.

Preparation of the Data.

Greenwich Date. — Correct the chronometer time for its error from Greenwich time and deduce the Greenwich Date, i. e. the Greenwich day and hour (mean time), reckoning the hours in succession from 0 to 24, beginning at noon.

Nautical Almanac. — With the Greenwich Date enter the Almanac and take out the moon's semidiameter and horizontal parallax; and if the sun is observed, its semidiameter and horizontal parallax;* but if a planet is observed, its horizontal parallax only.

Apparent Altitude of the Moon. — To the altitude given by the sextant apply the index correction of the instrument and subtract the dip of the horizon, Table I. If the lower limb is observed, add the semidiameter augmented by Table II.; if the upper limb is observed, subtract the augmented semidiameter. The result is the apparent altitude of the moon's centre, denoted "☾'s *App. Alt.*"

Apparent Altitude of the Sun, Planet, or Star. — To the observed altitude apply the index correction of the sextant, and subtract the dip, Table I.; and if the sun is used, add its semidiameter when the lower limb is observed, or subtract it when the upper limb is observed. The result is the apparent altitude required, denoted by "⊙'s or ✱'s *App. Alt.*"

Apparent Distance. — 1st. When the sun is used, to the observed distance (corrected for index error when necessary) add the moon's augmented semidiameter and the sun's semidiameter. 2d. When a planet or star is used, add the moon's augmented semidiameter if its nearest limb is observed, but subtract it if its farthest limb is observed. The result is "*App. Dist.*"

Moon's Reduced Parallax and Refraction. — Enter Table III. with the latitude of the place of observation and the moon's horizontal parallax, and take out the correction, which add to the horizontal parallax. Call the result the moon's reduced parallax, or "☾'s *Red. P.*"

Enter Table IV. with the moon's apparent altitude, and take out the mean reduced refraction, and apply to this mean refraction the corrections given in Tables IV. A. and IV. B., adding or subtracting these corrections according to the directions in the Tables. The result is the moon's reduced refraction or "☾'s *Red. R.*"

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* The sun's horizontal parallax may be assumed as $8''.5$.

Subtract the "☾'s *Red. R.*" from the "☾'s *Red. P.*" and mark the result as "☾'s *Red. P. and R.*"

*Reduced Parallax and Refraction of Sun, Planet, or Star.** — With the apparent altitude of the sun, planet, or star, take from Table IV. the mean reduced refraction, which correct by Tables IV. A. and IV. B. If the sun is observed, subtract its horizontal parallax (which may be always taken at 8″.5) from its reduced refraction, and mark the result as "⊙'s *Red. P. & R.*" If a planet is observed subtract its horizontal parallax, and mark the result as "✱'s *Red. P. & R.*" If a star is observed its reduced refraction is at once the required "✱'s *Red. P. & R.*"

Computation of the True Distance.

Take from Table V. the four logarithms *A*, *B*, *C*, *D*,† and place these logs. each at the head of a column, marking the columns *A*, *B*, *C*, and *D*, respectively; then put the

log. of ☾'s *Red. P. & R.*	(Table IX.)	in Columns	*A*	and	*B*
log. of ⊙'s *Red. P. & R.*	"	"	*C*	"	*D*
log. sine ☾'s *App. Alt.*	(Bowd. Table XXVII.)	"	*A*	"	*D*
log. sine ⊙'s *App. Alt.*	"	"	*B*	"	*C*
log. cotangent *App. Dist.*	"	"	*A*	"	*C*
log. cosecant *App. Dist.*	"	"	*B*	"	*D.*

The sum of the four logs. in Col. *A* is the log. (Table IX.) of the *First Part of ☾'s Correction*, which is to be marked + when the App. Dist. is less than 90°, but — when the App. Dist. is greater than 90°.

The sum of the four logs. in Col. *B* is the log. (Table IX.) of the *Second Part of ☾'s Correction*, which is always to be marked —.

The sum of the four logs. in Col. *C* is the log. (Table IX.) of the *First Part of the ⊙'s or ✱'s Correction*, which is to be marked — when the App. Dist. is less than 90°, but + when the App. Dist. is greater than 90°.

The sum of the four logs. in Col. *D* is the log. (Table IX.) of the *Second Part of the ⊙'s or ✱'s Correction*, which is always to be marked +.

Combine the first and second parts of the ☾'s correction according to the signs (+ or —) prefixed; that is, take their *sum* if they have the *same* sign, but their difference if they have *different* signs, and prefix the sign of the greater to the result, which call "☾'s *whole Correction.*"

In the same manner form the ⊙'s *or* ✱'s *whole Correction.*

First Correction of Distance. — Combine the ☾'s *whole corr.* and the ⊙'s *or* ✱'s

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* The parallax of a star being zero, its "reduced parallax and refraction" become, of course, merely its "reduced refraction"; but as no mistake can arise from marking it as "✱'s *P. & R.*," this designation has been retained in order to give simplicity and uniformity at once to the rules and the tables.

† No interpolation is required in taking out these logarithms.

whole corr. according to their signs; the result is the ***First Correction of Distance,*** which is to be added to or subtracted from the apparent distance, according as its sign is + or —.

Second Correction of Distance. — Enter Table VI. with the Apparent Distance and the First Correction of Distance, and take out the *Second Correction of Distance,* which is to be applied to the distance according to the directions in the side columns of the Table.

Correction for the Elliptical Figure of the Moon's Disc, or Contraction of the Moon's Semidiameter (Table VII.). — Enter Table VII. A. with the ☾'s App. Alt. and ☾'s Red. P. & R., and take out the number. With this number and the ☾'s whole correction enter Table VII. B. and take the required *contraction,* which is to be *added* to the App. Dist. when the *farthest* limb is observed, but *subtracted* when the *nearest* limb is observed.

Correction for the Elliptical Figure of the Sun's Disc, or Contraction of the Sun's Semidiameter (Table VIII.). — Enter Table VIII. A. with the ⊙'s App. Alt. and ⊙'s Red. P. & R. and take out the number. With this number and the ⊙'s whole corr. enter Table VIII. B. and take out the required *contraction,* which is always to be *subtracted* from the distance (the *nearest* limb of the sun being always observed).

Correction for Compression or for the Spheroidal Figure of the Earth. — Take from the Nautical Almanac for the Greenwich Date the value of log. N, given with the lunar distance observed.* To log. N add the log. sine of the latitude of the place of observation; the sum is the log. (Table IX.) of the required *correction for compression.* In North latitude *add* this correction to the distance if log. N in the Nautical Almanac is marked +, or *subtract* it if log. N is marked —; in South latitude subtract the correction when log. N is +, and add it when log. N is —.

All these corrections being applied to the Apparent Distance, the result is the *True Distance.*

To find the Error of the Chronometer.

Find in the Nautical Almanac the two distances between which the true distance falls. Take out the first of these together with the Prop. Log. following it and the hours of Greenwich time over it. Find the difference between the distance taken from the Almanac and the true distance, and to the log. of this difference (Table IX.) *add* the Prop. Log. from the Almanac; the sum is the log. (Table IX.) of an interval of time to be added to the hours of Greenwich time taken from the Almanac. The result is the *approximate* Greenwich time.

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* The values of log. N are given in this number of the Almanac for the distances from the sun only, and will be found in Table XI. of this Appendix. For other distances log. N may be found with sufficient accuracy for ordinary purposes from Table XII. by the following rule.

From the Nautical Almanac take the moon's and star's (or planet's) declinations to the nearest whole degree. With the moon's declination and apparent distance take from Table XII. A. the *first part of N,* and mark it with the sign in the table if the declination is *North;* but if the declination is *South,* change the sign from + to — or from — to +. With the star's (or planet's) declination and apparent distance, take from Table XII. B. the *second part of N,* and mark it + when the declination is *North,* and — when *South.* Take the *sum,* or *difference,* of the two parts, according as their signs are the *same* or *different,* and to the resulting number prefix the sign of the greater. The logarithm of this number of seconds, taken in Table IX., with its sign prefixed, is the required log. N, to be used as directed in the text.

To correct this Greenwich time, take the difference between the two Prop. Logs. in the Almanac which stand against the two distances between which the true distance falls. With this difference and the interval of time just found, enter Table X. of this Appendix, and take out the seconds, which are to be *added* to the approximate Greenwich time when the Prop. Logs. are *decreasing*, but *subtracted* when the Prop. Logs. are *increasing*. The result is the *true Greenwich time.*

The difference between the true Greenwich time and the time shown by the chronometer is the error of the chronometer as determined by the lunar observation.

DEGREE OF DEPENDENCE.

If the error thus determined agrees with that deduced by means of the rate and original error, the chronometer has run well, and its rate is confirmed; if otherwise, more or less doubt is thrown upon the chronometer, according to the degree of accuracy of the lunar observation itself. An error of 10″ in the measurement of the distance produces about 20^s error in the Greenwich time; and since, even with the best observers, a single set of distances is subject to a possible error of 10″, it may be well to consider the chronometer as still to be trusted so long as it does not differ from the lunar by more than 20^s. Since, however, so much depends upon skill in measuring the distance, the observer can only form a correct judgment of the degree of dependence to be placed upon his own observations by repeated trials and a careful comparison of his several results.

Example I.

In Lat. 35° 30′ N., Long. 30° W., by account, on September 7th, 1855, about 6h. A. M., the Greenwich chronometer showing 8h. 29m. 57s..5 and supposed to be *fast* 21m. 1s..5; the observed distance of ☉'s and ☾'s nearest limbs is 43° 52′ 10″; observed alt. ☾ 49° 32′ 50″; observed alt. ☉ 5° 27′ 10″; barometer 29.1 inches; thermometer 75°; height of the eye above the sea 20 feet; index correction of the sextant 0. What is the error of the chronometer on Greenwich time according to these observations?

Preparation of the Data.

	h. m. s.		′ ″		′ ″
Chronometer	8 29 57.5	☾'s semid. N. A.	14 50.0	☾'s Par. N. A.	54 19.4
(Fast)	— 21 1.5	Aug. Tab. II.	+11.2	Aug. Tab. III.	+3.6
Greenw. date Sept. 6	20 8 56.0	☾'s aug. Semid.	15 1.2	☾'s *Red. P.*	54 23.0
	° ′ ″		° ′ ″		° ′ ″
Obs'd Alt. ☾	49 32 50	Obs'd alt. ☉	5 27 10	Obs'd distance ☉| |☾	43 52 10
Dip Tab. I.	— 4 23	Dip	— 4 23	☾'s aug. semid.	+ 15 1
☾'s aug. semid.	+15 1	☉'s semid.	+15 55	☉'s semid.	+15 55
☾'s *App. Alt.*	49 43 28	☉'s *App. Alt.*	5 38 42	*App. Dist.*	44 23 6
	′ ″		′ ″		
☾'s Red. R. Tab. IV.	1 16	☉'s Red. R. Tab. IV.	8 57		
Barom. Tab. IV. A.	—3	Barom. Tab. IV. A.	—16		
Therm. Tab. IV. B.	—4	Therm. Tab. IV. B.	—28		
☾'s *Red. R.*	1 9	☉'s *Red. R.*	8 13		
☾'s *Red. P.*	54 23	☉'s *Par.*	8		
☾'s *Red. P. & R.*	53 14	☉'s *Red. P. & R.*	8 5		

Computation of the True Distance.

A.		C.			
log. A. Tab. V.	0.0021	log. C. Tab. V.	9.9949		
log. ☾'s Red. P. & R. Tab. IX.	3.5043	log. ☉'s Red. P. & R. Tab. IX.	2.6857		
log. sin. ☾'s App. Alt.	9.8825	log. sin. ☉'s App. Alt.	8.9929		
log. cot. App. Dist.	0.0093	log. cot. App. Dist.	0.0093		
log. Tab. IX.	3.3982	log. Tab. IX.	1.6828		
1st *Part* ☾'s *corr.*	+41′ 42″	1st *Part* ☉'s *corr.*	—0′ 48″		
B.		D.			
log. B. Tab. V.	9.9951	log. D. Tab. V.	9.9992		
log. ☾'s Red. P. & R.	3.5043	log. ☉'s Red. P. & R.	2.6857		
log. sin. ☉'s App. Alt.	8.9929	log. sin. ☾'s App. Alt.	9.8825		
log. cosec. App. Dist.	0.1552	log. cosec. App. Dist.	0.1552		
log. Tab. IX.	2.6475	log. Tab. IX.	2.7226		° ′ ″
2d *Part* ☾'s *corr.*	— 7′ 24″	2d *Part* ☉'s *corr.*	+8′ 48″	*App. Dist.*	44 23 6
☾'s *whole corr.*	+34′ 18″	☉'s *whole corr.*	+8′ 0″	1st *corr.*	+42 18
				2d *corr.* Tab. VI.	— 16
				Contraction of ☾'s *Semid.* Tab. VII.	0
log. N.* Tab. XI.	—0.764			*Contraction of* ☉'s *Semid.* Tab. VIII.	— 20
log. sin. Lat. 35° 30′ N.	+9.764				
log. Tab. IX.	—0.528	. . . .		*Corr. for compression*	— 3
				True Distance	45 4 45

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* This log. may be found by the rule in the note on p. 5 of this Appendix, in case it is desired to apply the correction for compression to observations taken in former years.

LUNAR DISTANCES.

To find the Error of the Chronometer.

True distance	45° 4′ 45″			
Distance N. A. at XVIII.^h.	46 3 17	P. L.	0.3433	Diff. P. logs. + 5
Difference	58 32	log. Tab. IX.	3.5456	
Approximate interval	2^h. 9^m. 3^s.	log. Tab. IX.	3.8889	
Add	18			
Approx. Gr. time	20 9 3			
Corr. Tab. X.	—2			
True Gr. time	20 9 1			
Gr. time by Chronom.	20 8 56			
Chronom. and lunar differ only	5			

and therefore the chronometer may be considered as going well.

This example, worked by Bowditch's First Method, gives the true distance 45° 5′ 44″, differing from the above 59″, in consequence of the omission by Bowditch of the small corrections. This difference would produce an error of 2^m. 10^s. in the Greenwich time, and consequently the longitude in this case deduced by Bowditch's method would be in error 32′.5; that is, *more than half a degree.*

Example II.

In Lat. 55° 20′ S., Long. 120° 25′ W., by account, on August 29th, 1855, about 9^h. 40^m. P. M., the Greenwich chronometer showing 5^h. 35^m. 46^s.2 and from previous rate supposed *slow* 5^m. 12^s.; the following distance and altitudes are found, being the mean of six observations corrected for index errors. Observed distance of Fomalhaut and ☾'s farthest limb 46° 30′ 23″; observed alt. ☾ 6° 26′ 10″; observed alt. Fomalhaut 52° 34′ 40″; barometer 31 inches; thermometer 20°; height of the eye above the sea 18 feet. What is the error of the chronometer according to these observations?

Preparation of the Data.

	h. m. s.		′ ″		′ ″
Chronometer	5 35 46.2	☾'s semid. N. A.	16 26.3	☾'s Par. N. A.	60 11.8
(Slow)	+ 5 12	Aug. Tab. II.	+2.0	Aug. Tab. III.	+8.3
Greenw. date Aug. 29^d.	17 40 58.2	☾'s aug. Semid.	16 28.3	☾'s *Red. P.*	60 20.1
	° ′ ″		° ′ ″		° ′ ″
Obs'd Alt. ☾	6 26 10	Obs'd alt. ✱	52 34 40	Obs'd distance ✱ ☾	46 30 23
Dip Tab. I.	— 4 9	Dip	— 4 9	☾'s aug. semid.	— 16 28
☾'s aug. semid.	+16 28	✱'s *App. Alt.*	52 30 31	*App. Dist.*	46 13 55
☾'s *App. Alt.*	6 38 29				
	′ ″		′ ″		
☾'s Red. R. Tab. IV.	7 48	✱'s Red. R. Tab. IV.	1 13		
Barom. Tab. IV. A.	+16	Barom. Tab. IV. A.	+ 2		
Therm. Tab. IV. B.	+32	Therm. Tab. IV. B.	+ 5		
☾'s *Red. R.*	8 36	✱'s *Red. R.*	1 20		
☾'s *Red. P.*	60 20	✱'s *Par.*	0		
☾'s *Red. P. & R.*	51 44	✱'s *Red. P. & R.*	1 20		

CORRECTION OF LUNAR DISTANCES.

Computation of the True Distance.

A.		C.	
log. A. Tab. V.	0.0274	log. C. Tab. V.	9.9999
log. ☾'s Red. P. & R. Tab. IX.	3.4919	log. ✱'s Red. P. & R. Tab. IX.	1.9031
log. sin. ☾'s App. Alt.	9.0632	log. sin. ✱'s App. Alt.	9.8995
log. cot. App. Dist.	9.9813	log. cot. App. Dist.	9.9813
log. Tab. IX.	2.5638	log. Tab. IX.	1.7838
1st *Part* ☾'s *corr.*	+6′ 6″	1st *Part* ✱'s *corr.*	—1′ 1″

B.		D.	
log. B. Tab. V.	0.0001	log. D. Tab. V.	0.0267
log. ☾'s Red. P. & R.	3.4919	log. ✱'s Red. P. & R.	1.9031
log. sin. ✱'s App. Alt.	9.8995	log. sin. ☾'s App. Alt.	9.0632
log. cosec. App. Dist.	0.1414	log. cosec. App. Dist.	0.1414
log. Tab. IX.	3.5329	log. Tab. IX.	1.1344
2*d Part* ☾'s *corr.*	—56′ 51″	2*d Part* ✱'s *corr.*	+0′ 14″
☾'s *whole corr.*	—50′ 45″	✱'s *whole corr.*	—0′ 47″

log. N.*	—1.230
log. sin. Lat. 55° S.	—9.913
log. Tab. IX.	+1.143

	°	′	″
App. Dist.	46	13	55
1*st corr.*		—51	32
2*d corr.* Tab. VI.		—	22
Contraction of ☾'s *Semid.* Tab. VII.		+	17
Corr. for comprèssion		+	14
True Distance	45	22	32

To find the Error of the Chronometer.

True Distance	45°	22′	32″		
Dist. N. A. at XV.h.	43	51	59	P. L.	0.2527 Diff. P. Logs. —6
Difference	1	30	33	log. Tab. IX.	3.7350
Approx. interval	2h.	42m.	1s.	log. Tab. IX.	3.9877
Add	15				
Approx. Gr. time	17	42	1		
Corr. Tab. X.			+1		
True Gr. time	17	42	2		
Gr. time by chronom.	17	40	58		
Chron. and lunar differ		1	4		

and, the distances having been observed with care, the chronometer has probably changed its rate. A second observation confirming this, we must, from repeated lunars, determine a new rate, which may be used until an opportunity occurs of rating at a fixed place whose longitude is tolerably well known.

This example, worked by Bowditch's Second Method, gives the true distance 45° 21′ 31″, which is in error 1′ 1″, and would produce in the longitude deduced from it in this case an error of about 28′.

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* This value of log. N. is formed from Tab. XII. by the rule in the note on page 5 of this Appendix: thus

☾'s dec. 4° N., App. Dist. 46° in Tab. XII. A. gives 1st Part of N — 1″
✱'s dec. 30° S., App. Dist. 46° in Tab. XII. B. gives 2d Part of N —16
N —17

the log. of which is in Tab. IX. 1.230.

EXPLANATION OF THE TABLES.*

TABLE I. — *Dip of the Sea Horizon*, computed by Delambre's formula (*Astronomie*, Vol. III., Chap. XXXVI.), which, when feet are substituted for metres, is

$$D = 58''.8\sqrt{F},$$

where F = height of the eye above the level of the sea, in feet,
D = depression of the sea horizon, in seconds.

TABLE II. — *Augmentation of the Moon's Semidiameter*, computed by the formula (Francœur, *Astron. Pratique*, p. 58)

$$x = c\,s^2 \sin h + \tfrac{1}{2} c^2 s^3 \sin^2 h + \tfrac{1}{2} c^2 s^3,$$

where h = moon's apparent altitude,
s = moon's horizontal semidiameter,
x = augmentation of semidiameter for the altitude h,
$\log c = 5.25021$.

TABLE III. — *Augmentation of the Moon's Horizontal Parallax*, or correction to reduce the moon's equatorial horizontal parallax to that point of the earth's axis which lies in the vertical of the observer in any given latitude, computed by the formulas

$$\Delta\pi = \pi(b - 1), \quad b = \frac{1}{\sqrt{(1 - e^2 \sin^2\phi)}},$$

where π = equatorial horizontal parallax,
ϕ = latitude,
e = eccentricity of the meridian, $\log e^2 = 7.81602$,
$\Delta\pi$ = augmentation of the horizontal parallax for the latitude ϕ.

TABLE IV. — *Mean Reduced Refraction for Lunars*, computed by the formula

$$r' = \frac{r}{\cos h} = \frac{k}{\sin h},$$

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* Tables I., II., and IX., which are not peculiar to my method, are inserted to save a reference to other works for them; so that the computer requires, in connection with this volume, only a table of logarithmic sines and tangents. These three tables have, however, been recomputed, as stated in the "Explanation."

where h = the apparent altitude,
r = mean refraction, barometer 30 inches, Fahrenheit's thermometer 50°,
r' = mean reduced refraction for lunars.

The refractions employed are BESSEL's, and were taken from his table (*Astronomische Untersuchungen*, Vol. I. p. 200), which gives directly $K = r \tan h$.

TABLES IV. A. AND IV. B. — *Corrections of the Mean Refraction for the Height of the Barometer and Thermometer*, deduced also from Bessel's table above cited. These tables serve for correcting either r or r', according as the one or the other is taken as the argument.

TABLE V. — *Logs. of A, B, C, and D, for computing the First Correction of the Lunar Distance*, computed by the formulas

$$A = K'^2 \frac{\sin (h + \frac{1}{2} \Delta h)}{\sin h}, \qquad C = \frac{\sin (H - \Delta H)}{\sin H},$$

$$B = K' \frac{\sin (2H - \Delta H)}{\sin 2H}, \qquad D = \frac{\sin (2h + \Delta h)}{\sin 2h},$$

where h = moon's apparent altitude,
H = sun's, planet's, or star's apparent altitude (denoted in the tables by $\odot$'s or $\ast$'s App. Alt.),
Δh = difference of ☾'s apparent and true altitudes,
ΔH = difference of $\odot$'s or $\ast$'s apparent and true altitudes,
$\log K' = .000126$,

and Δh, ΔH were computed from the arguments "apparent altitude" and "reduced parallax and refraction" by the formulas

$$\Delta h = (p - r')\, K' \cos h, \qquad \Delta H = (R' - P) \cos H,$$

where $p - r'$ = ☾'s reduced parallax and refraction,
$R' - P$ = $\odot$'s or $\ast$'s reduced parallax and refraction,
p = ☾'s horizontal parallax $+ \Delta \pi$ (Table III.),
P = $\odot$'s or $\ast$'s horizontal parallax (for a star $P = 0$),
r' = ☾'s reduced refraction (Table IV.),
R' = $\odot$'s or $\ast$'s reduced refraction (Table IV.).

When h and H become 90°, the values of B and D assume the indeterminate forms

$$B = \frac{0}{0}, \qquad D = \frac{0}{0},$$

and therefore, for computing their logarithms near the end of the table, the formulas were transformed as follows:

$$B = C\, K' \left[1 + \tfrac{1}{2} (R' - P) \sin 1'' \sin H\right],$$

$$D = \frac{A}{K'} \left[1 - \tfrac{1}{2} (p - r')\, K' \sin 1'' \sin h\right].$$

By means of Logs. A, B, C, and D, the first correction of the distance is found by the following formulas: —

if

$d =$ apparent distance of ☾ from ⊙ or ✱,
$\Delta_1 d =$ first correction,
$A' = \quad A\,(p - r') \sin h \cot d,$
$B' = - B\,(p - r') \sin H \operatorname{cosec} d,$
$C' = - C\,(R' - P) \sin H \cot d,$
$D' = \quad D\,(R' - P) \sin h \operatorname{cosec} d,$

then

$$\Delta_1 d = (A' + B') + (C' + D'),$$

and in the directions for using the tables, $A' + B'$ is called the "whole correction for ☾," and $C' + D'$ the "whole correction for ⊙ or ✱."

TABLE VI. — *Second Correction of the Lunar Distance*, computed by the formula

$$\Delta_2 d = -\tfrac{1}{2} \Delta_1 d^2 \sin 1'' \cot d.$$

Strictly, this formula should be

$$\Delta_2 d = -\tfrac{1}{2} \Delta d^2 \sin 1'' \cot d,$$

where $\Delta d =$ whole correction of distance $= \Delta_1 d + \Delta_2 d$, so that by entering the table first with $\Delta_1 d$ we find only an approximate value of $\Delta_2 d$. But if with this approximate value we form the approximate whole correction $\Delta_1 d + \Delta_2 d$, and enter with this as the argument in the place of $\Delta_1 d$, we have the true value of $\Delta_2 d$. It is evident, however, from the table itself, that, in most practical cases, this degree of precision is unnecessary.

TABLE VII. — *For finding the Correction of the Lunar Distance for the Contraction of the Moon's Semidiameter* (by refraction), computed by the formula

$$\Delta s = \Delta s_0 \frac{(A' + B')^2}{(p - r')^2 \cos^2 h}$$

where the notation already employed is preserved, and

$\Delta s_0 =$ contraction of the moon's vertical semidiameter at the altitude h,
$\Delta s =$ contraction of the inclined semidiameter, or of that which lies in the direction of the lunar distance.

This table is subdivided into Tables VII. A. and VII. B. If we put

$$g = \frac{\Delta s_0}{(p - r')^2 \cos^2 h} \times f,$$

then

$$\Delta s = (A' + B')^2 \times \frac{g}{f},$$

where f is an arbitrary factor employed to give g convenient integral values, and in these tables we have taken $f = 18000000$; Δs_0, Δs, $p - r'$, and $A' + B'$ being all expressed in seconds. Table VII. A. gives the value of g with the arguments $p - r'$ and h; and Table VII. B. gives Δs with the arguments $A' + B'$ and g.

To find Δs_0 from the arguments $p - r'$ and h, the *mean* value of r' for the altitude h was added to $p - r'$, so that p became known; whence also the semidiameter, —

and consequently, by means of the refraction tables, the contraction Δs_0. The value of Δs given by Table VII. B. is therefore that which corresponds to a mean state of the air, and in *extreme* cases may be in error 4″, but in no *probable* case will it be in error more than 1″. The true value of Δs might, however, always be found by correcting it, as refraction, by Tables IV. A. and IV. B.

TABLE VIII. — *For finding the Correction of the Lunar Distance for the Contraction of the Sun's Semidiameter* (by refraction), computed by the formula

$$\Delta S = \Delta S_0 \frac{(C' + D')^2}{(R' - P)^2 \cos^2 H},$$

where, in addition to the notation already employed, ΔS_0 = contraction of the sun's vertical semidiameter at the altitude H; ΔS = contraction of the inclined semidiameter. Table VIII. A., with the arguments $R' - P$ and H, gives a number

$$G = \frac{(R' - P)^2 \cos^2 H}{\Delta S_0} \times F,$$

in which ΔS_0 is taken for a mean value of the sun's semidiameter, P is assumed at 8″.5, and F is an arbitrary factor $= \frac{1}{200}$; $R' - P$, $C' + D'$, ΔS_0, and ΔS being all expressed in seconds. Table VIII. B., with the arguments $C' + D'$ and G, gives

$$\Delta S = (C' + D')^2 \times \frac{F}{G}.$$

This value of ΔS is that which belongs to the actual state of the air, but is for a mean value of the sun's semidiameter, the variations of which would not change the tabular value by more than 0″.5 in any case.

TABLE IX. — *Logarithms of Seconds.* This table contains the common logarithm answering to the arc (either space or time) in the argument. For the convenience of the navigator, this table is given with the argument, degrees, minutes, and seconds, or hours, minutes, and seconds, for every ten seconds, at the side, the unit figure of the seconds being found at the top.

The logarithm is given with the proper characteristic prefixed.

TABLE X. — This table contains the correction for second differences of the moon's motion.

TABLE XI. contains the values of log. N for the distances from the sun, computed by the following formula: —

$$N = N' \pi \left(\frac{\sin \Delta}{\sin d} - \frac{\sin \delta}{\tan d}\right);$$

where π = ☾'s equatorial horizontal parallax,

Δ = sun's declination,

δ = ☾'s declination,

d = angular distance of the moon and sun referred to the centre of the earth,

$N' = \frac{\epsilon^2}{\sqrt{(1 - \epsilon^2 \sin^2 \phi)}}$, for which the value of N' is taken corresponding to

$\phi = 45°$, or log. $N' = 7.8170$.

TABLE XII. — *For finding the Value of N.* By this table an approximate value of N may be readily found, with sufficient accuracy for ordinary purposes. When very great accuracy is desired, the formula given in the explanation of Table XI. should be used. In Table XII. the moon's horizontal parallax is assumed at its mean value $= 57' \, 30''$, and the two parts of N are separately tabulated by the formulas

$$a \ (= \text{first part of } N) \ = - N' \pi \sin \delta \operatorname{cotan} d,$$

$$b \ (= \text{second part of } N) = \quad N' \pi \sin \Delta \operatorname{cosec} d;$$

from which N is found by the formula

$$N = a + b.$$

NOTE. — The demonstration of most of the formulas cited in the preceding explanation is given in the *Astronomical Journal* (Cambridge, Mass.), Vol. II., Nos. 3 and 4.

TABLES.

TABLE I.		TABLE II.							TABLE III.			
Dip of the Sea Horizon.		Augmentation of the Moon's Semidiameter.							Augmentation of the Moon's Hor. Parallax.			
Height of the Eye.	Dip of the Horizon.	Apparent Altitude of ☽.	☽'s Semidiameter.						Latitude of Observation.	☽'s Horizontal Parallax.		
			14′	15′		16′		17′		53′	57′	61′
			30″	0″	30″	0″	30″	0″				
Feet.	′ ″	°	″	″	″	″	″	″	°	″	′	″
0	0 00	0	0.1	0.1	0.1	0.1	0.2	0.2	0	0.0	0.0	0.0
1	0 59	2	0.6	0.6	0.7	0.7	0.8	0.8	2	0.0	0.0	0.0
2	1 23	4	1.0	1.1	1.2	1.3	1.4	1.5	4	0.1	0.1	0.1
3	1 42	6	1.5	1.6	1.7	1.9	2.0	2.1	6	0.1	0.1	0.1
4	1 58	8	2.0	2.1	2.3	2.4	2.6	2.7	8	0.2	0.2	0.2
5	2 11	10	2.4	2.6	2.8	3.0	3.2	3.4	10	0.3	0.3	0.4
6	2 24	12	2.9	3.1	3.3	3.6	3.8	4.0	12	0.5	0.5	0.5
7	2 36	14	3.4	3.6	3.9	4.1	4.4	4.7	14	0.6	0.7	0.7
8	2 46	16	3.8	4.1	4.4	4.7	5.0	5.3	16	0.8	0.9	0.9
9	2 56	18	4.3	4.6	4.9	5.2	5.6	5.9	18	1.0	1.1	1.1
10	3 06	20	4.7	5.1	5.4	5.8	6.1	6.5	20	1.2	1.3	1.4
11	3 15	22	5.2	5.5	5.9	6.3	6.7	7.1	22	1.5	1.6	1.7
12	3 24	24	5.6	6.0	6.4	6.8	7.3	7.7	24	1.7	1.9	2.0
13	3 32	26	6.0	6.5	6.9	7.4	7.8	8.3	26	2.0	2.2	2.3
14	3 40	28	6.5	6.9	7.4	7.9	8.4	8.9	28	2.3	2.5	2.6
15	3 48	30	6.9	7.3	7.9	8.4	8.9	9.5	30	2.6	2.8	3.0
16	3 55	32	7.3	7.8	8.3	8.9	9.4	10.0	32	2.9	3.1	3.4
17	4 02	34	7.7	8.2	8.8	9.4	10.0	10.6	34	3.3	3.5	3.8
18	4 09	36	8.1	8.6	9.2	9.8	10.5	11.1	36	3.6	3.9	4.1
19	4 16	38	8.4	9.0	9 7	10.3	10.9	11.6	38	4.0	4.3	4.6
20	4 23	40	8.8	9.4	10.1	10.7	11.4	12.1	40	4.3	4.6	5.0
21	4 29	42	9.2	9.8	10.5	11.2	11.9	12.6	42	4.7	5.0	5.4
22	4 36	44	9.5	10.2	10.9	11.6	12.3	13.1	44	5.0	5.4	5.8
23	4 42	46	9.8	10.5	11.3	12.0	12.8	13.6	46	5.4	5.8	6.2
24	4 48	48	10.2	10.9	11.6	12.4	13.2	14.0	48	5.8	6.2	6.6
25	4 54	50	10.5	11.2	12.0	12.8	13.6	14.4	50	6.1	6.6	7.1
26	5 00	52	10.8	11.5	12.3	13.1	14.0	14.9	52	6.5	7.0	7.5
27	5 06	54	11.1	11.8	12.7	13.5	14.4	15.3	54	6.8	7.4	7.9
28	5 11	56	11.3	12.1	13.0	13.8	14.7	15.6	56	7.2	7.7	8.3
29	5 17	58	11.6	12.4	13.3	14.1	15.1	16.0	58	7.5	8.1	8.6
30	5 22	60	11.8	12.7	13.5	14.4	15.4	16.3	60	7.8	8.4	9.0
35	5 48	62	12.1	12.9	13.8	14.7	15.7	16.6	62	8.1	8.8	9.4
40	6 12	64	12.3	13.2	14.1	15.0	16.0	16.9	64	8.4	9.1	9.7
45	6 34	66	12.5	13.4	14.3	15.2	16.2	17.2	66	8.7	9.4	10.0
50	6 56	68	12.7	13.6	14.5	15.5	16.5	17.5	68	9.0	9.7	10.3
55	7 16	70	12.9	13.8	14.7	15.7	16.7	17.7	70	9.2	9.9	10.6
60	7 35	72	13.0	13.9	14.9	15.9	16.9	17.9	72	9.5	10.2	10.9
65	7 54	74	13.1	14.1	15.0	16.0	17.1	18.1	74	9.7	10.4	11.1
70	8 12	76	13.3	14.2	15.2	16.2	17.2	18.3	76	9.8	10.6	11.3
75	8 29	78	13.4	14.3	15.3	16.3	17.4	18.4	78	10.0	10.8	11.5
80	8 46	80	13.5	14.4	15.4	16.4	17.5	18.6	80	10.1	10.9	11.7
85	9 02	82	13.5	14.5	15.5	16.5	17.6	18.7	82	10.3	11.0	11.8
90	9 18	84	13 6	14.6	15.6	16.6	17.6	18.7	84	10.3	11.1	11.9
95	9 33	86	13.6	14.6	15.6	16.6	17.7	18.8	86	10.4	11.2	12.0
100	9 48	88	13.7	14.6	15.6	16.7	17.7	18.8	88	10.4	11.2	12.0
		90	13.7	14.6	15.6	16.7	17.7	18.8	90	10.5	11.3	12.0

TABLE IV.

Mean *Reduced Refraction* for Lunars. Barometer 30 inches. Fahrenheit's Thermometer 50°.

Apparent Altitude.		Reduced Refraction.		Diff to 1'.	Apparent Altitude.		Reduced Refraction.		Apparent Altitude.		Reduced Refraction.		Apparent Altitude.		Reduced Refraction.	
°	'	'	"	"	°	'	'	"	°	'	'	"	°	'	'	"
5	0	9	54.2	1.6	10	0	5	24.1	15	0	3	41.7	27	0	2	7.8
	5	9	46.3	1.5		5	5	21.6		10	3	39.4	27	30	2	5.7
	10	9	38.6	1.5		10	5	19.2		20	3	37.1	28	0	2	3.7
	15	9	31.0	1.5		15	5	16.8		30	3	34.9	28	30	2	1.7
	20	9	23.7	1.4		20	5	14.4		40	3	32.7	29	0	1	59.8
	25	9	16.5	1.4		25	5	12.1		50	3	30.6	29	30	1	58.0
5	30	9	9.5	1.4	10	30	5	9.8	16	0	3	28.5	30	0	1	56.2
	35	9	2.7	1.3		35	5	7.5		10	3	26.5	30	30	1	54.5
	40	8	56.0	1.3		40	5	5.3		20	3	24.5	31	0	1	52.8
	45	8	49.5	1.3		45	5	3.1		30	3	22.6	31	30	1	51.2
	50	8	43.1	1.2		50	5	0.9		40	3	20.7	32	0	1	49.7
	55	8	36.9	1.2		55	4	58.8		50	3	18.8	32	30	1	48.2
6	0	8	30.9	1.2	11	0	4	56.7	17	0	3	16.9	33	0	1	46.7
	5	8	24.9	1.2		5	4	54.6		10	3	15.1	33	30	1	45.3
	10	8	19.1	1.1		10	4	52.5		20	3	13.4	34	0	1	44.0
	15	8	13.4	1.1		15	4	50.5		30	3	11.6	34	30	1	42.7
	20	8	7.8	1.1		20	4	48.5		40	3	9.9	35	0	1	41.4
	25	8	2.4	1.1		25	4	46.6		50	3	8.2	35	30	1	40.2
6	30	7	57.0	1.0	11	30	4	44.6	18	0	3	6.6	36	0	1	39.0
	35	7	51.8	1.0		35	4	42.7		10	3	5.0	36	30	1	37.8
	40	7	46.7	1.0		40	4	40.8		20	3	3.4	37	0	1	36.7
	45	7	41.7	1.0		45	4	38.9		30	3	1.8	37	30	1	35.6
	50	7	36.7	1.0		50	4	37.1		40	3	0.3	38	0	1	34.5
	55	7	31.9	0.9		55	4	35.3		50	2	58.8	38	30	1	33.5
7	0	7	27.2	0.9	12	0	4	33.5	19	0	2	57.3	39	0	1	32.5
	5	7	22.6	0.9		5	4	31.7		10	2	55.9	39	30	1	31.5
	10	7	18.0	0.9		10	4	30.0		20	2	54.4	40	0	1	30.6
	15	7	13.6	0.9		15	4	28.3		30	2	53.0	40	30	1	29.6
	20	7	9.2	0.9		20	4	26.6		40	2	51.6	41	0	1	28.7
	25	7	4.9	0.8		25	4	24.9		50	2	50.3	41	30	1	27.8
7	30	7	0.8	0.8	12	30	4	23.2	20	0	2	49.0	42	0	1	27.0
	35	6	56.6	0.8		35	4	21.6		10	2	47.6	42	30	1	26.2
	40	6	52.6	0.8		40	4	20.0		20	2	46.4	43	0	1	25.4
	45	6	48.6	0.8		45	4	18.4		30	2	45.1	43	30	1	24.6
	50	6	44.8	0.8		50	4	16.8		40	2	43.8	44	0	1	23.8
	55	6	40.9	0.7		55	4	15.2		50	2	42.6	44	30	1	23.1
8	0	6	37.2	0.7	13	0	4	13.7	21	0	2	41.4	45	0	1	22.4
	5	6	33.5	0.7		5	4	12.2		10	2	40.2	46	0	1	21.0
	10	6	29.9	0.7		10	4	10.7		20	2	39.0	47	0	1	19.6
	15	6	26.3	0.7		15	4	9.2		30	2	37.9	48	0	1	18.4
	20	6	22.8	0.7		20	4	7.7		40	2	36.7	49	0	1	17.2
	25	6	19.4	0.7		25	4	6.3		50	2	35.6	50	0	1	16.0
8	30	6	16.0	0.7	13	30	4	4.8	22	0	2	34.5	51	0	1	15.0
	35	6	12.7	0.6		35	4	3.4		10	2	33.4	52	0	1	13.9
	40	6	9.5	0.6		40	4	2.0		20	2	32.4	53	0	1	13.0
	45	6	6.3	0.6		45	4	0.6		30	2	31.3	54	0	1	12.0
	50	6	3.1	0.6		50	3	59.3		40	2	30.3	55	0	1	11.1
	55	6	0.0	0.6		55	3	57.9		50	2	29.2	56	0	1	10.3
9	0	5	57.0	0.6	14	0	3	56.6	23	0	2	28.2	57	0	1	9.5
	5	5	54.0	0.6		5	3	55.3		20	2	26.3	58	0	1	8.7
	10	5	51.1	0.6		10	3	54.0		40	2	24.4	59	0	1	8.0
	15	5	48.2	0.6		15	3	52.7	24	0	2	22.5	60	0	1	7.3
	20	5	45.3	0.6		20	3	51.4		20	2	20.7	62	0	1	6.0
	25	5	42.5	0.5		25	3	50.1		40	2	18.9	64	0	1	4.9
9	30	5	39.8	0.5	14	30	3	48.9	25	0	2	17.2	66	0	1	3.8
	35	5	37.0	0.5		35	3	47.6		20	2	15.5	68	0	1	2.9
	40	5	34.4	0.5		40	3	46.4		40	2	13.9	70	0	1	2.0
	45	5	31.7	0.5		45	3	45.2	26	0	2	12.3	73	0	1	1.0
	50	5	29.2	0.5		50	3	44.0		20	2	10.8	76	0	1	0.1
	55	5	26.6	0.5		55	3	42.8		40	2	9.3	80	0	0	59.2
10	0	5	24.1		15	0	3	41.7	27	0	2	7.8	90	0	0	58.3

TABLE IV. A.

Correction of the Mean Refraction for the Height of the Barometer.

Barometer.	MEAN REFRACTION.																					Barometer.
Subtract.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Add.
	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	
27.50	0″	2″	5″	7″	10″	12″	15″	17″	20″	23″	25	28″	30″	33″	35″	38″	40″	43″	45″	48″	51″	
27.55	0	2	5	7	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45	47	50	
27.60	0	2	5	7	10	12	14	17	19	22	24	27	29	31	34	36	39	41	44	46	49	
27.65	0	2	5	7	9	12	14	16	19	21	24	26	28	31	33	36	38	40	43	45	48	
27.70	0	2	5	7	9	11	14	16	18	21	23	25	28	30	32	35	37	39	42	44	47	
27.75	0	2	4	7	9	11	13	16	18	20	23	25	27	29	32	34	36	39	41	43	46	
27.80	0	2	4	7	9	11	13	15	18	20	22	24	27	29	31	33	35	38	40	42	45	
27.85	0	2	4	6	9	11	13	15	17	19	22	24	26	28	30	32	35	37	39	41	44	
27.90	0	2	4	6	8	10	13	15	17	19	21	23	25	27	30	32	34	36	38	40	43	
27.95	0	2	4	6	8	10	12	14	16	18	21	23	25	27	29	31	33	35	37	39	42	
28.00	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	41	
28.05	0	2	4	6	8	10	12	14	16	18	20	22	24	25	27	29	31	33	35	37	39	
28.10	0	2	4	6	8	9	11	13	15	17	19	21	23	25	27	29	31	33	34	36	38	
28.15	0	2	4	6	7	9	11	13	15	17	19	20	22	24	26	28	30	32	34	36	37	
28.20	0	2	4	5	7	9	11	13	14	16	18	20	22	24	25	27	29	31	33	35	36	
28.25	0	2	3	5	7	9	10	12	14	16	18	19	21	23	25	26	28	30	32	34	35	
28.30	0	2	3	5	7	8	10	12	14	15	17	19	21	22	24	26	27	29	31	33	34	
28.35	0	2	3	5	7	8	10	12	13	15	17	18	20	22	23	25	27	28	30	32	33	
28.40	0	2	3	5	6	8	10	11	13	14	16	18	19	21	23	24	26	27	29	31	32	
28.45	0	2	3	5	6	8	9	11	12	14	16	17	19	20	22	23	25	27	28	30	31	
28.50	0	1	3	4	6	7	9	10	12	14	15	17	18	20	21	23	24	26	27	29	30	31.50
28.55	0	1	3	4	6	7	9	10	12	13	15	16	17	19	20	22	23	25	26	28	29	31.45
28.60	0	1	3	4	6	7	8	10	11	13	14	15	17	18	20	21	23	24	25	27	28	31.40
28.65	0	1	3	4	5	7	8	9	11	12	14	15	16	18	19	20	22	23	25	26	27	31.35
28.70	0	1	3	4	5	6	8	9	10	12	13	14	16	17	18	20	21	22	24	25	26	31.30
28.75	0	1	2	4	5	6	7	9	10	11	13	14	15	16	18	19	20	21	23	24	25	31.25
28.80	0	1	2	4	5	6	7	8	10	11	12	13	14	16	17	18	19	21	22	23	24	31.20
28 85	0	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	31.15
28.90	0	1	2	3	4	5	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	31.10
28.95	0	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	31.05
29.00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	31.00
29.05	0	1	2	3	4	5	6	7	8	9	10	11	11	12	13	14	15	16	17	18	19	30.95
29.10	0	1	2	3	4	4	5	6	7	8	9	10	11	12	13	14	15	15	16	17	18	30.90
29.15	0	1	2	3	3	4	5	6	7	8	9	9	10	11	12	13	14	15	15	16	17	30.85
29.20	0	1	2	2	3	4	5	6	6	7	8	9	10	10	11	12	13	14	15	15	16	30.80
29.25	0	1	1	2	3	4	4	5	6	7	8	8	9	10	11	11	12	13	14	14	15	30.75
29.30	0	1	1	2	3	3	4	5	6	6	7	8	8	9	10	11	11	12	13	13	14	30.70
29.35	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	10	11	12	13	13	30.65
29.40	0	1	1	2	2	3	4	4	5	5	6	7	7	8	8	9	10	10	11	12	12	30.60
29.45	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	11	11	30.55
29.50	0	0	1	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	9	10	10	30.50
29.55	0	0	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	30.45
29.60	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	30.40
29.65	0	0	1	1	1	2	2	2	3	3	4	4	4	5	5	5	6	6	6	7	7	30.35
29.70	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	5	6	6	30.30
29.75	0	0	0	1	1	1	1	2	2	2	3	3	3	3	4	4	4	4	5	5	5	30.25
29.80	0	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	30.20
29.85	0	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	30.15
29.90	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	30.10
29.95	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	30.05
30.00	0	0	0	0	0	0	0	0	00	0	0	0	0	0	0	0	0	0	0	0	0	30.00
Subtract.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Add.
Barometer.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Barometer.
	MEAN REFRACTION.																					

TABLE IV. B.

Correction of the Mean Refraction for the Height of the Thermometer.

Thermom.	MEAN REFRACTION.																					Thermom.
Add.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Add.
	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	
—10°	0″	4″	8″	12″	16″	20″	24″	28″	33″	37″	41″	46″	50″	55″	60″	65″	70″	75″	80″	85″	90″	—10°
— 8	0	4	8	12	15	19	23	27	31	36	40	44	48	53	58	62	67	72	77	82	87	— 8
— 6	0	4	7	11	15	19	22	26	30	34	38	42	47	51	55	60	64	69	74	79	84	— 6
— 4	0	4	7	11	14	18	22	25	29	33	37	41	45	49	53	57	62	66	71	76	80	— 4
— 2	0	3	7	10	14	17	21	24	28	31	35	39	43	47	51	55	59	64	68	72	77	— 2
0	0	3	7	10	13	16	20	23	27	30	34	37	41	45	49	53	57	61	65	69	74	0
2	0	3	6	9	12	16	19	22	25	29	32	36	39	43	47	50	54	58	62	66	70	2
4	0	3	6	9	12	15	18	21	24	28	31	34	37	41	44	48	52	55	59	63	67	4
6	0	3	6	8	11	14	17	20	23	26	29	32	36	39	42	46	49	53	56	60	64	6
8	0	3	5	8	11	14	16	19	22	25	28	31	34	37	40	43	47	50	54	57	61	8
10	0	3	5	8	10	13	15	18	21	24	26	29	32	35	38	41	44	48	51	54	58	10
11	0	2	5	7	10	13	15	18	20	23	26	28	31	34	37	40	43	46	49	53	56	11
12	0	2	5	7	10	12	15	17	20	22	25	28	30	33	36	39	42	45	48	51	54	12
13	0	2	5	7	9	12	14	17	19	22	24	27	30	32	35	38	41	44	47	50	53	13
14	0	2	5	7	9	11	14	16	19	21	24	26	29	31	34	37	40	42	45	48	51	14
15	0	2	4	7	9	11	13	16	18	20	23	25	28	30	33	36	38	41	44	47	50	15
16	0	2	4	6	9	11	13	15	18	20	22	25	27	29	32	35	37	40	43	45	48	16
17	0	2	4	6	8	10	13	15	17	19	21	24	26	29	31	33	36	39	41	44	47	17
18	0	2	4	6	8	10	12	14	16	19	21	23	25	28	30	32	35	37	40	43	45	18
19	0	2	4	6	8	10	12	14	16	18	20	22	24	27	29	31	34	36	39	41	44	19
20	0	2	4	6	8	9	11	13	15	17	19	22	24	26	28	30	33	35	37	40	42	20
21	0	2	4	5	7	9	11	13	15	17	19	21	23	25	27	29	31	34	36	38	41	21
22	0	2	3	5	7	9	11	12	14	16	18	20	22	24	26	28	30	32	35	37	39	22
23	0	2	3	5	7	8	10	12	14	15	17	19	21	23	25	27	29	31	33	36	38	23
24	0	2	3	5	6	8	10	11	13	15	17	18	20	22	24	26	28	30	32	34	36	24
25	0	2	3	5	6	8	9	11	13	14	16	18	19	21	23	25	27	29	31	33	35	25
26	0	1	3	4	6	7	9	11	12	14	15	17	19	20	22	24	26	28	29	31	33	26
27	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	23	25	26	38	30	32	27
28	0	1	3	4	5	7	8	10	11	12	14	15	17	19	20	22	23	25	27	29	30	28
29	0	1	3	4	5	6	8	9	11	12	13	15	16	18	19	21	22	24	26	27	29	29
30	0	1	2	4	5	6	7	9	10	11	13	14	15	17	18	20	21	23	24	26	28	30
31	0	1	2	3	5	6	7	8	9	11	12	13	15	16	17	19	20	22	23	25	26	31
32	0	1	2	3	4	6	7	8	9	10	11	13	14	15	16	18	19	20	22	23	25	32
33	0	1	2	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	21	22	23	33
34	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	22	34
35	0	1	2	3	4	5	6	6	7	8	9	10	11	13	14	15	16	17	18	19	20	35
36	0	1	2	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	36
37	0	1	2	2	3	4	5	6	6	7	8	9	10	11	12	13	14	15	16	17	18	37
38	0	1	1	2	3	4	4	5	6	7	7	8	9	10	11	12	13	13	14	15	16	38
39	0	1	1	2	3	3	4	5	5	6	7	8	8	9	10	11	11	12	13	14	15	39
40	0	1	1	2	2	3	4	4	5	6	6	7	8	8	9	10	10	11	12	13	13	40
41	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	9	9	10	11	11	12	41
42	0	0	1	1	2	2	3	3	4	4	5	5	6	7	7	8	8	9	9	10	11	42
43	0	0	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	43
44	0	0	1	1	1	2	2	3	3	3	4	4	4	5	5	6	6	7	7	8	8	44
45	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	6	6	6	7	45
46	0	0	0	1	1	1	1	2	2	2	2	2	3	3	4	4	4	4	5	5	5	46
47	0	0	0	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	47
48	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	48
49	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	49
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
Add.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Add.
Thermom.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Thermom.
	MEAN REFRACTION.																					

TABLE IV. B.

Correction of the Mean Refraction for the Height of the Thermometer.

Thermom.	MEAN REFRACTION.																					Thermom.
Subtract.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Subtract.
	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	
50°	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	50°
51	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	51
52	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	52
53	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	4	4	53
54	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	54
55	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	55
56	0	0	1	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	56
57	0	0	1	1	2	2	2	3	3	4	4	5	5	6	6	6	7	8	8	8	9	57
58	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	9	9	10	10	58
59	0	1	1	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11	12	59
60	0	1	1	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	60
61	0	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	11	12	12	13	14	61
62	0	1	1	2	3	3	4	5	6	6	7	8	9	9	10	11	12	13	14	15	15	62
63	0	1	1	2	3	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	17	63
64	0	1	2	2	3	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	64
65	0	1	2	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	65
66	0	1	2	3	4	5	6	6	7	8	9	10	11	12	14	15	16	17	18	19	20	66
67	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	22	67
68	0	1	2	3	4	5	6	7	8	9	11	11	13	14	15	16	18	19	20	22	23	68
69	0	1	2	3	4	5	7	8	9	10	11	12	13	15	16	17	19	20	21	23	24	69
70	0	1	2	3	5	6	7	8	9	10	12	12	14	16	17	18	20	21	22	24	25	70
71	0	1	2	4	5	6	7	8	10	11	12	13	15	16	18	19	20	22	23	25	27	71
72	0	1	2	4	5	6	8	9	10	11	13	14	16	17	18	20	21	23	25	26	28	72
73	0	1	3	4	5	7	8	9	11	12	13	14	16	18	19	21	22	24	26	27	29	73
74	0	1	3	4	5	7	8	10	11	12	14	15	17	18	20	22	23	25	27	28	30	74
75	0	1	3	4	6	7	8	10	11	13	14	16	18	19	21	22	24	26	28	29	31	75
76	0	1	3	4	6	7	9	10	12	13	15	16	18	20	22	23	25	27	29	31	32	76
77	0	1	3	5	6	8	9	11	12	14	16	17	19	21	22	24	26	28	30	32	34	77
78	0	2	3	5	6	8	9	11	13	14	16	18	20	21	23	25	27	29	31	33	35	78
79	0	2	3	5	6	8	10	11	13	15	17	18	20	22	24	26	28	30	32	34	36	79
80	0	2	3	5	7	8	10	12	14	15	17	19	21	23	25	27	29	31	33	35	37	80
81	0	2	3	5	7	9	10	12	14	16	18	20	21	24	26	28	30	32	34	36	38	81
82	0	2	4	5	7	9	11	13	14	16	18	20	22	24	26	28	31	33	35	37	40	82
83	0	2	4	5	7	9	11	13	15	17	19	21	23	25	27	29	31	34	36	38	41	83
84	0	2	4	6	8	9	11	13	15	17	19	21	23	26	28	30	32	35	37	39	42	84
85	0	2	4	6	8	10	12	14	16	18	20	22	24	26	29	31	33	36	38	40	43	85
86	0	2	4	6	8	10	12	14	16	18	20	23	25	27	29	32	34	37	39	42	44	86
87	0	2	4	6	8	10	12	14	17	19	21	23	25	28	30	32	35	38	40	43	45	87
88	0	2	4	6	8	10	13	15	17	19	21	24	26	28	31	33	36	38	41	44	46	88
89	0	2	4	6	9	11	13	15	17	20	22	24	27	29	32	34	37	39	42	45	48	89
90	0	2	4	7	9	11	13	16	18	20	23	25	27	30	32	35	38	40	43	46	49	90
91	0	2	4	7	9	11	14	16	18	21	23	25	28	31	33	36	39	41	44	47	50	91
92	0	2	5	7	9	11	14	16	19	21	24	26	29	31	34	37	39	42	45	48	51	92
93	0	2	5	7	9	12	14	17	19	22	24	27	29	32	35	37	40	43	46	49	52	93
94	0	2	5	7	10	12	14	17	19	22	25	27	30	33	35	38	41	44	47	50	53	94
95	0	2	5	7	10	12	15	17	20	22	25	28	30	33	36	39	42	45	48	51	54	95
96	0	2	5	7	10	12	15	18	20	23	26	28	31	34	37	40	43	46	49	52	55	96
97	0	3	5	8	10	13	15	18	21	23	26	29	32	35	38	41	44	47	50	53	56	97
98	0	3	5	8	10	13	16	18	21	24	27	29	32	35	38	41	44	48	51	54	58	98
99	0	3	5	8	11	13	16	19	21	24	27	30	33	36	39	42	45	49	52	55	59	99
100	0	3	5	8	11	13	16	19	22	25	28	31	34	37	40	43	46	50	53	56	60	100
Subtract.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Subtract.
	0		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	
Thermom.	MEAN REFRACTION.																					Thermom

TABLE V. LOG. A.

Logs A, B, C, and D, for Computing the *First Correction* of the Lunar Distance.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.														
	41′	**42′**	**43′**	**44′**	**45′**	**46′**	**47′**	**48′**	**49′**	**50′**	**51′**	**52′**	**53′**	**54′**	**55′**
5° 0	.0288	0295	0301	0308	0315	0321	0328	0335	0341	0348	0355	0361	0368		
2	.0286	0293	0299	0306	0313	0319	0326	0333	0339	0346	0352	0359	0366		
4	.0284	0291	0297	0304	0311	0317	0324	0330	0337	0344	0350	0357	0363		
6	.0282	0289	0296	0302	0309	0315	0322	0328	0335	0341	0348	0354	0361		
8	.0281	0287	0294	0300	0307	0313	0320	0326	0333	0339	0346	0352	0359		
5 10	.0279	0285	0292	0298	0305	0311	0318	0324	0331	0337	0344	0350	0356		
12	.0277	0284	0290	0296	0303	0309	0316	0322	0329	0335	0341	0348	0354		
14	.0275	0282	0288	0295	0301	0307	0314	0320	0327	0333	0339	0346	0352		
16	.0274	0280	0286	0293	0299	0306	0312	0318	0325	0331	0337	0344	0350		
18	.0272	0278	0285	0291	0297	0304	0310	0316	0323	0329	0335	0341	0348		
5 20	.0270	0277	0283	0289	0296	0302	0308	0314	0321	0327	0333	0339	0346		
22	.0269	0275	0281	0288	0294	0300	0306	0313	0319	0325	0331	0337	0344		
24	.0267	0273	0280	0286	0292	0298	0304	0311	0317	0323	0329	0335	0341		
26	.0265	0272	0278	0284	0290	0296	0303	0309	0315	0321	0627	0333	0339	0346	
28	.0264	0270	0276	0282	0289	0295	0301	0307	0313	0319	0325	0331	0337	0344	
5 30	.0262	0268	0275	0281	0287	0293	0299	0305	0311	0317	0323	0329	0335	0342	
32	.0261	0267	0273	0279	0285	0291	0297	0303	0309	0315	0321	0327	0334	0340	
34	.0259	0265	0271	0277	0283	0290	0296	0302	0308	0314	0320	0326	0332	0338	
36	.0258	0264	0270	0276	0282	0288	0294	0300	0306	0312	0318	0324	0330	0336	
38		0262	0268	0274	0280	0286	0292	0298	0304	0310	0316	0322	0328	0334	
5 40		0261	0267	0273	0279	0285	0290	0296	0302	0308	0314	0320	0326	0332	
42		0259	0265	0271	0277	0283	0289	0295	0301	0306	0312	0318	0324	0330	
44		0258	0264	0270	0275	0281	0287	0293	0299	0305	0311	0316	0322	0328	
46		0256	0262	0268	0274	0280	0286	0291	0297	0303	0309	0315	0320	0326	
48		0255	0261	0267	0272	0278	0284	0290	0296	0301	0307	0313	0319	0324	
5 50		0253	0259	0265	0271	0277	0282	0288	0294	0300	0305	0311	0317	0323	
52		0252	0258	0264	0269	0275	0281	0287	0292	0298	0304	0309	0315	0321	
54		0251	0256	0262	0268	0274	0279	0285	0291	0296	0302	0308	0313	0319	
56		0249	0255	0261	0266	0272	0278	0283	0289	0295	0300	0306	0312	0317	
58		0248	0254	0259	0265	0271	0276	0282	0287	0293	0299	0304	0310	0316	
6 0		0247	0252	0258	0263	0269	0275	0280	0286	0291	0297	0303	0308	0314	
2		0245	0251	0256	0262	0268	0273	0279	0284	0290	0295	0301	0307	0312	
4		0244	0249	0255	0261	0266	0272	0277	0283	0288	0294	0299	0305	0310	
6		0243	0248	0254	0259	0265	0270	0276	0281	0287	0292	0298	0303	0309	
8		0241	0247	0252	0258	0263	0269	0274	0280	0285	0291	0296	0302	0307	
6 10		0240	0246	0251	0256	0262	0267	0273	0278	0284	0289	0295	0300	0306	
12		0239	0244	0250	0255	0261	0266	0271	0277	0282	0288	0293	0299	0304	
14		0237	0243	0248	0254	0259	0265	0270	0275	0281	0286	0292	0297	0302	
16		0236	0242	0247	0252	0258	0263	0269	0274	0279	0285	0290	0295	0301	
18		0235	0240	0246	0251	0257	0262	0267	0273	0278	0283	0289	0294	0299	
6 20		0234	0239	0245	0250	0255	0261	0266	0271	0276	0282	0287	0292	0298	
22		0233	0238	0243	0249	0254	0259	0264	0270	0275	0280	0286	0291	0296	
24		0231	0237	0242	0247	0253	0258	0263	0268	0274	0279	0284	0289	0295	
26			0236	0241	0246	0251	0257	0262	0267	0272	0277	0283	0288	0293	
28			0234	0240	0245	0250	0255	0260	0266	0271	0276	0281	0286	0292	0297
6 30			0233	0238	0244	0249	0254	0259	0264	0270	0275	0280	0285	0290	0295
32			0232	0237	0242	0248	0253	0258	0263	0268	0273	0278	0284	0289	0294
34			0231	0236	0241	0246	0251	0257	0262	0267	0272	0277	0282	0287	0292
36			0230	0235	0240	0245	0250	0255	0260	0266	0271	0276	0281	0286	0291
38			0229	0234	0239	0244	0249	0254	0259	0264	0269	0274	0279	0284	0290
6 40			0227	0232	0238	0243	0248	0253	0258	0263	0268	0273	0278	0283	0288
42			0226	0231	0236	0241	0246	0252	0257	0262	0267	0272	0277	0282	0287
44			0225	0230	0235	0240	0245	0250	0255	0260	0265	0270	0275	0280	0285
46			0224	0229	0234	0239	0244	0249	0254	0259	0264	0269	0274	0279	0284
48			0223	0228	0233	0238	0243	0248	0253	0258	0263	0268	0273	0278	0283
6 50			0222	0227	0232	0237	0242	0247	0252	0257	0262	0266	0271	0276	0281
52			0221	0226	0231	0236	0241	0246	0250	0255	0260	0265	0270	0275	0280
54			0220	0225	0230	0235	0239	0244	0249	0254	0259	0264	0269	0274	0279
56			0219	0224	0229	0233	0238	0243	0248	0253	0258	0263	0267	0272	0277
58			0218	0223	0227	0232	0237	0242	0247	0252	0257	0261	0266	0271	0276
7 0			0217	0222	0226	0231	0236	0241	0246	0251	0255	0260	0265	0270	0275

TABLE V. LOG. A.

Logs. A, B, C, and D, for Lunars.

App. Alt.	REDUCED PARALLAX AND REFRACTION OF ☾.													
of ☽.	44′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′
7° 0′	.0222	0226	0231	0236	0241	0246	0251	0255	0260	0265	0270	0275		
3	.0220	0225	0230	0234	0239	0244	0249	0254	0258	0263	0268	0273		
6	.0218	0223	0228	0233	0238	0242	0247	0252	0257	0261	0266	0271		
9	.0217	0222	0226	0231	0236	0241	0245	0250	0255	0260	0264	0269		
12	.0215	0220	0225	0230	0234	0239	0244	0248	0253	0258	0262	0267		
7 15	.0214	0219	0223	0228	0233	0237	0242	0247	0251	0256	0261	0265		
18	.0213	0217	0222	0226	0231	0236	0240	0245	0250	0254	0259	0263		
21	.0211	0216	0220	0225	0230	0234	0239	0243	0248	0253	0257	0262		
24	.0210	0214	0219	0223	0228	0233	0237	0242	0246	0251	0255	0260		
27	.0208	0213	0217	0222	0227	0231	0236	0240	0245	0249	0254	0258		
7 30	.0207	0211	0216	0220	0225	0230	0234	0239	0243	0248	0252	0257		
33	.0206	0210	0215	0219	0224	0228	0232	0237	0241	0246	0250	0255		
36	.0204	0209	0213	0218	0222	0227	0231	0235	0240	0244	0249	0253		
39	.0203	0207	0212	0216	0221	0225	0229	0234	0238	0243	0247	0252		
42	.0202	0206	0210	0215	0219	0224	0228	0232	0237	0241	0246	0250		
7 45	.0200	0205	0209	0213	0218	0222	0227	0231	0235	0240	0244	0248		
48	.0199	0203	0208	0212	0216	0221	0225	0229	0234	0238	0242	0247		
51	.0198	0202	0206	0211	0215	0219	0224	0228	0232	0237	0241	0245.	0249	
54	.0196	0201	0205	0209	0214	0218	0222	0227	0231	0235	0239	0244	0248	
57	.0195	0200	0204	0208	0212	0217	0221	0225	0229	0234	0238	0242	0246	
8 0	.0194	0198	0203	0207	0211	0215	0219	0224	0228	0232	0236	0241	0245	
3	.0193	0197	0201	0206	0210	0214	0218	0222	0227	0231	0235	0239	0243	
6	.0192	0196	0200	0204	0208	0213	0217	0221	0225	0229	0233	0238	0242	
9		0195	0199	0203	0207	0211	0215	0220	0224	0228	0232	0236	0240	
12		0193	0198	0202	0206	0210	0214	0218	0222	0227	0231	0235	0239	
8 15		0192	0196	0201	0205	0209	0213	0217	0221	0225	0229	0233	0237	
18		0191	0195	0199	0203	0207	0212	0217	0220	0224	0228	0232	0236	
21		0190	0194	0198	0202	0206	0210	0214	0218	0222	0226	0231	0235	
24		0189	0193	0197	0201	0205	0209	0213	0217	0221	0225	0229	0233	
27		0188	0192	0196	0200	0204	0208	0212	0216	0220	0224	0228	0232	
8 30		0187	0191	0195	0199	0203	0207	0211	0215	0219	0223	0226	0230	
33		0186	0190	0193	0197	0201	0205	0209	0213	0217	0221	0225	0229	
36		0184	0188	0192	0196	0200	0204	0208	0212	0216	0220	0224	0228	
39		0183	0187	0191	0195	0199	0203	0207	0211	0215	0219	0223	0226	
42		0182	0186	0190	0194	0198	0202	0206	0210	0214	0217	0221	0225	
8 45		0181	0185	0189	0193	0197	0201	0205	0208	0212	0216	0220	0224	
48		0180	0184	0188	0192	0196	0200	0203	0207	0211	0215	0219	0223	
51		0179	0183	0187	0191	0195	0198	0202	0206	0210	0214	0218	0221	
54		0178	0182	0186	0190	0193	0197	0201	0205	0209	0212	0216	0220	
57		0177	0181	0185	0189	0192	0196	0200	0204	0208	0211	0215	0219	
9 0		0176	0180	0184	0188	0191	0195	0199	0203	0206	0210	0214	0218	
3		0175	0179	0183	0186	0190	0194	0198	0201	0205	0209	0213	0216	
6		0174	0178	0182	0185	0189	0193	0197	0200	0204	0208	0211	0215	
9		0173	0177	0181	0184	0188	0192	0196	0199	0203	0207	0210	0214	
12		0172	0176	0180	0183	0187	0191	0194	0198	0202	0206	0209	0213	
9 15		0171	0175	0179	0182	0186	0190	0193	0197	0201	0204	0208	0212	
18		0170	0174	0178	0181	0185	0189	0192	0196	0200	0203	0207	0211	
21		0170	0173	0177	0180	0184	0188	0191	0195	0199	0202	0206	0209	
24			0172	0176	0179	0183	0187	0190	0194	0198	0201	0205	0208	
27			0171	0175	0179	0182	0186	0189	0193	0196	0200	0204	0207	
9 30			0170	0174	0178	0181	0185	0188	0192	0195	0199	0203	0206	
33			0170	0173	0177	0180	0184	0187	0191	0194	0198	0201	0205	
36			0169	0172	0176	0179	0183	0186	0190	0193	0197	0200	0204	
39			0168	0171	0175	0178	0182	0185	0189	0192	0196	0199	0203	
42			0167	0170	0174	0177	0181	0184	0188	0191	0195	0198	0202	
9 45			0166	0169	0173	0176	0180	0183	0187	0190	0194	0197	0201	
48			0165	0169	0172	0176	0179	0182	0186	0189	0193	0196	0200	0203
51			0164	0168	0171	0175	0178	0182	0185	0188	0192	0195	0199	0202
54			0163	0167	0170	0174	0177	0181	0184	0187	0191	0194	0198	0201
57			0163	0166	0169	0173	0176	0180	0183	0186	0190	0193	0197	0200
10 0			0162	0165	0169	0172	0175	0179	0182	0186	0189	0192	0196	0199

TABLE V. LOG. A.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′
	REDUCED PARALLAX AND REFRACTION OF ☽.												
10° 0′	·0162	0165	0169	0172	0175	0179	0182	0186	0189	0192	0196	0199	
5	·0160	0164	0167	0171	0174	0177	0181	0184	0187	0191	0194	0197	
10	·0159	0162	0166	0169	0172	0176	0179	0182	0186	0189	0192	0196	
15	·0158	0161	0164	0168	0171	0174	0178	0181	0184	0187	0191	0194	
20	·0156	0160	0163	0166	0170	0173	0176	0179	0183	0186	0189	0192	
25	·0155	0158	0162	0165	0168	0171	0175	0178	0181	0184	0188	0191	
10 30	.0154	0157	0160	0164	0167	0170	0173	0177	0180	0183	0186	0189	
35	.0153	0156	0159	0162	0166	0169	0172	0175	0178	0181	0185	0188	
40	.0151	0155	0158	0161	0164	0167	0171	0174	0177	0180	0183	0186	
45	.0150	0153	0157	0160	0163	0166	0169	0172	0175	0179	0182	0185	
50	.0149	0152	0155	0158	0162	0165	0168	0171	0174	0177	0180	0183	
55	.0148	0151	0154	0157	0160	0163	0167	0170	0173	0176	0179	0182	
11 0	.0147	0150	0153	0156	0159	0162	0165	0168	0171	0174	0177	0181	
5	.0146	0149	0152	0155	0158	0161	0164	0167	0170	0173	0176	0179	
10		0148	0151	0154	0157	0160	0163	0166	0169	0172	0175	0178	
15		0146	0149	0152	0155	0158	0161	0164	0167	0170	0173	0176	
20		0145	0148	0151	0154	0157	0160	0163	0166	0169	0172	0175	
25		0144	0147	0150	0153	0156	0159	0162	0165	0168	0171	0174	
11 30		0143	0146	0149	0152	0155	0158	0161	0164	0167	0170	0172	
35		0142	0145	0148	0151	0154	0157	0160	0162	0165	0168	0171	
40		0141	0144	0147	0150	0153	0156	0158	0161	0164	0167	0170	
45		0140	0143	0146	0149	0151	0154	0157	0160	0163	0166	0169	
50		0139	0142	0145	0148	0150	0153	0156	0159	0162	0165	0167	
55		0138	0141	0144	0146	0149	0152	0155	0158	0161	0163	0166	
12 0		0137	0140	0143	0145	0148	0151	0154	0157	0159	0162	0165	
5		0136	0139	0142	0144	0147	0150	0153	0156	0158	0161	0164	
10		0135	0138	0141	0143	0146	0149	0152	0154	0157	0160	0163	
15		0134	0137	0140	0142	0145	0148	0151	0153	0156	0159	0162	
20		0133	0136	0139	0141	0144	0147	0150	0152	0155	0158	0160	
25		0132	0135	0138	0140	0143	0146	0148	0151	0154	0157	0159	
12 30		0131	0134	0137	0139	0142	0145	0147	0150	0153	0155	0158	
35		0130	0133	0136	0138	0141	0144	0146	0149	0152	0154	0157	
40		0129	0132	0135	0137	0140	0143	0145	0148	0151	0153	0156	
45		0129	0131	0134	0136	0139	0142	0144	0147	0150	0152	0155	0158
50		0128	0130	0133	0136	0138	0141	0143	0146	0149	0151	0154	0156
55		0127	0129	0132	0135	0137	0140	0142	0145	0148	0150	0153	0155
13 0		0126	0129	0131	0134	0136	0139	0141	0144	0147	0149	0152	0154
5		0125	0128	0130	0133	0135	0138	0141	0143	0146	0148	0151	0153
10		0124	0127	0129	0132	0135	0137	0140	0142	0145	0147	0150	0152
15		0123	0126	0129	0131	0134	0136	0139	0141	0144	0146	0149	0151
20		0123	0125	0128	0130	0133	0135	0138	0140	0143	0145	0148	0150
25		0122	0124	0127	0129	0132	0134	0137	0139	0142	0144	0147	0149
13 30		0121	0124	0126	0129	0131	0133	0136	0138	0141	0143	0146	0148
35		0120	0123	0125	0128	0130	0133	0135	0138	0140	0142	0145	0147
40		0120	0122	0124	0127	0129	0132	0134	0137	0139	0142	0144	0146
45			0121	0124	0126	0128	0131	0133	0136	0138	0141	0143	0145
50			0120	0123	0125	0128	0130	0132	0135	0137	0140	0142	0145
55			0120	0122	0124	0127	0129	0132	0134	0136	0139	0141	0144
14 0			0119	0121	0124	0126	0128	0131	0133	0136	0138	0140	0143
5			0118	0121	0123	0125	0128	0130	0132	0135	0137	0139	0142
10			0117	0120	0122	0124	0127	0129	0132	0134	0136	0139	0141
15			0117	0119	0121	0124	0126	0128	0131	0133	0135	0138	0140
20			0116	0118	0121	0123	0125	0128	0130	0132	0135	0137	0139
25			0115	0118	0120	0122	0124	0127	0129	0131	0134	0136	0138
14 30			0114	0117	0119	0121	0124	0126	0128	0131	0133	0135	0137
35			0114	0116	0118	0121	0123	0125	0128	0130	0132	0134	0137
40			0113	0115	0118	0120	0122	0124	0127	0129	0131	0134	0136
45			0112	0115	0117	0119	0121	0124	0126	0128	0130	0133	0135
50			0112	0114	0116	0118	0121	0123	0125	0127	0130	0132	0134
55			0111	0113	0116	0118	0120	0122	0124	0127	0129	0131	0133
15 0			0110	0113	0115	0117	0119	0121	0124	0126	0128	0130	0133

TABLE V. LOG. A.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.														
	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′			
15° 0′	.0110	0113	0115	0117	0119	0121	0124	0126	0128	0130	0133				
10	.0109	0111	0113	0116	0118	0120	0122	0124	0127	0129	0131				
20	.0108	0110	0112	0114	0116	0119	0121	0123	0125	0127	0129				
30	.0107	0109	0111	0113	0115	0117	0119	0121	0124	0126	0128				
40	.0105	0107	0110	0112	0114	0116	0118	0120	0122	0124	0126				
50	.0104	0106	0108	0110	0112	0115	0117	0119	0121	0123	0125				
16 0	.0103	0105	0107	0109	0111	0113	0115	0117	0119	0121	0124				
10	.0102	0104	0106	0108	0110	0112	0114	0116	0118	0120	0122				
20	.0101	0103	0105	0107	0109	0111	0113	0115	0117	0119	0121				
30	.0100	0102	0103	0105	0107	0109	0111	0113	0115	0117	0119				
40	.0098	0100	0102	0104	0106	0108	0110	0112	0114	0116	0118				
50	.0097	0099	0101	0103	0105	0107	0109	0111	0113	0115	0117				
17 0	.0096	0098	0100	0102	0104	0106	0108	0110	0112	0114	0116				
10	.0095	0097	0099	0101	0103	0105	0107	0109	0110	0112	0114				
20	.0094	0096	0098	0100	0102	0104	0106	0107	0109	0111	0113				
30		0095	0097	0099	0101	0103	0104	0106	0108	0110	0112				
40		0094	0096	0098	0100	0101	0103	0105	0107	0109	0111				
50		0093	0095	0097	0099	0100	0102	0104	0106	0108	0109				
18 0		0092	0094	0096	0098	0099	0101	0103	0105	0107	0108				
10		0091	0093	0095	0097	0098	0100	0102	0104	0105	0107	0109			
20		0090	0092	0094	0096	0097	0099	0101	0103	0104	0106	0108			
30		0089	0091	0093	0095	0096	0098	0100	0102	0103	0105	0107			
40		0088	0090	0092	0094	0095	0097	0099	0101	0102	0104	0106			
50		0088	0089	0091	0093	0094	0096	0098	0099	0101	0103	0105			
19 0		0087	0088	0090	0092	0093	0095	0097	0098	0100	0102	0104			
10		0086	0087	0089	0091	0092	0094	0096	0098	0099	0101	0103			
20		0085	0087	0088	0090	0092	0093	0095	0097	0098	0100	0102			
30		0084	0086	0087	0089	0091	0092	0094	0096	0097	0099	0101			
40		0083	0085	0087	0088	0090	0091	0093	0095	0096	0098	0100			
50		0082	0084	0086	0087	0089	0090	0092	0094	0095	0097	0099			
20 0		0082	0083	0085	0086	0088	0090	0091	0093	0094	0096	0098			
10		0081	0082	0084	0086	0087	0089	0090	0092	0093	0095	0097			
20		0080	0082	0083	0085	0086	0088	0089	0091	0093	0094	0096			
30		0079	0081	0082	0084	0086	0087	0089	0090	0092	0093	0095			
40		0079	0080	0082	0083	0085	0086	0088	0089	0091	0092	0094			
50		0078	0079	0081	0082	0084	0085	0087	0088	0090	0091	0093			
21 0		0077	0079	0080	0082	0083	0085	0086	0088	0089	0091	0092			
10		0076	0078	0079	0081	0082	0084	0085	0087	0088	0090	0091			
20		0076	0077	0079	0980	0082	0083	0085	0086	0087	0089	0090			
30		0075	0076	0078	0079	0081	0082	0084	0085	0087	0088	0090			
40		0074	0076	0077	0079	0080	0082	0083	0084	0086	0087	0089			
50		0074	0075	0076	0078	0079	0081	0082	0084	0085	0086	0088			
22 0		0073	0074	0076	0077	0079	0080	0081	0083	0084	0086	0087			
10		0072	0074	0075	0076	0078	0079	0081	0082	0083	0085	0086			
20		0072	0073	0074	0076	0077	0079	0080	0081	0083	0084	0086			
30		0071	0072	0074	0075	0076	0078	0079	0081	0082	0083	0085			
40		0070	0072	0073	0074	0076	0077	0079	0080	0081	0083	0084			
50		0070	0071	0072	0074	0075	0076	0078	0079	0081	0082	0083			
23 0		0069	0070	0072	0073	0074	0076	0077	0078	0080	0081	0082			
10		0068	0070	0071	0072	0074	0075	0076	0078	0079	0080	0082			
20		0068	0069	0070	0072	0073	0074	0076	0077	0078	0080	0081			
30		0067	0069	0070	0071	0072	0074	0075	0076	0078	0079	0080			
40		0067	0068	0069	0071	0072	0073	0074	0076	0077	0078	0080			
50		0066	0067	0069	0070	0071	0073	0074	0075	0076	0078	0079			
24 0			0067	0068	0069	0071	0072	0073	0074	0076	0077	0078			
10			0066	0067	0069	0070	0071	0073	0074	0075	0076	0078			
20			0066	0067	0068	0069	0071	0072	0073	0074	0076	0077			
30			0065	0066	0068	0069	0070	0071	0072	0074	0075	0076			
40			0065	0066	0067	0068	0069	0071	0072	0073	0074	0076			
50			0064	0065	0066	0068	0069	0070	0071	0072	0074	0075			
25 0			0063	0065	0066	0067	0068	0069	0071	0072	0073	0074			

TABLE V. LOG. A.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.										
	50′	**51′**	**52′**	**53′**	**54′**	**55′**	**56′**	**57′**	**58′**	**59′**	**60′**
25° 0′	.0063	0065	0066	0067	0068	0069	0071	0072	0073	0074	
20	.0062	0064	0065	0066	0067	0068	0069	0071	0072	0073	
40	.0061	0062	0064	0065	0066	0067	0068	0069	0071	0072	
26 0	.0060	0061	0063	0064	0065	0066	0067	0068	0069	0071	
20	.0059	0060	0062	0063	0064	0065	0066	0067	0068	0069	
40	.0058	0059	0061	0062	0063	0064	0065	0066	0067	0068	
27 0	.0057	0058	0060	0061	0062	0063	0064	0065	0066	0067	
20	.0056	0057	0059	0060	0061	0062	0063	0064	0065	0066	
40	.0055	0057	0058	0059	0060	0061	0062	0063	0064	0065	
28 0	.0055	0056	0057	0058	0059	0060	0061	0062	0063	0064	
20	.0054	0055	0056	0057	0058	0059	0060	0061	0062	0063	
40	.0053	0054	0055	0056	0057	0058	0059	0060	0061	0062	
29 0	.0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	
20	.0051	0052	0053	0054	0055	0056	0057	0058	0059	0060	
40	.0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	
30 0	.0050	0051	0051	0052	0053	0054	0055	0056	0057	0058	
20	.0049	0050	0051	0052	0052	0053	0054	0055	0056	0057	
40	.0048	0049	0050	0051	0052	0053	0053	0054	0055	0056	
31 0	.0047	0048	0049	0050	0051	0052	0053	0053	0054	0055	
20	.0047	0047	0048	0049	0050	0051	0052	0053	0054	0054	0055
40	.0046	0047	0048	0048	0049	0050	0051	0052	0053	0054	0054
32 0	.0045	0046	0047	0048	0048	0049	0050	0051	0052	0053	0054
20	.0044	0045	0046	0047	0048	0049	0049	0050	0051	0052	0053
40	.0044	0045	0045	0046	0047	0048	0049	0049	0050	0051	0052
33 0	.0043	0044	0045	0045	0046	0047	0048	0049	0049	0050	0051
20	.0042	0043	0044	0045	0046	0046	0047	0048	0049	0050	0050
40	.0042	0043	0043	0044	0045	0046	0046	0047	0048	0049	0050
34 0	.0041	0042	0043	0043	0044	0045	0046	0046	0047	0048	0049
20	.0040	0041	0042	0043	0043	0044	0045	0046	0047	0047	0048
40	.0040	0041	0041	0042	0043	0044	0044	0045	0046	0047	0047
35 0	.0039	0040	0041	0041	0042	0043	0044	0044	0045	0046	0047
20	.0039	0039	0040	0041	0042	0042	0043	0044	0044	0045	0046
40	.0038	0039	0039	0040	0041	0042	0042	0043	0044	0044	0045
36 0	.0037	0038	0039	0040	0040	0041	0042	0042	0043	0044	0044
20	.0037	0038	0038	0039	0040	0040	0041	0042	0042	0043	0044
40	.0036	0037	0038	0038	0039	0040	0040	0041	0042	0042	0043
37 0	.0036	0036	0037	0038	0038	0039	0040	0040	0041	0042	0042
20	.0035	0036	0037	0037	0038	0039	0039	0040	0040	0041	0042
40	.0035	0035	0036	0037	0037	0038	0039	0039	0040	0040	0041
38 0	.0034	0035	0035	0036	0037	0037	0038	0039	0039	0040	0040
20	.0034	0034	0035	0036	0036	0037	0037	0038	0039	0039	0040
40	.0033	0034	0034	0035	0036	0036	0037	0037	0038	0039	0039
39 0		0033	0034	0034	0035	0036	0036	0037	0037	0038	0039
20		0033	0033	0034	0035	0035	0036	0036	0037	0037	0038
40		0032	0033	0033	0034	0035	0035	0036	0036	0037	0037
40 0		0032	0032	0033	0033	0034	0035	0035	0036	0036	0037
20		0031	0032	0032	0033	0034	0034	0035	0035	0036	0036
40		0031	0031	0032	0032	0033	0034	0034	0035	0035	0036
41 0		0030	0031	0031	0032	0033	0033	0034	0034	0035	0035
20		0030	0030	0031	0031	0032	0033	0033	0034	0034	0035
40		0029	0030	0030	0031	0032	0032	0033	0033	0034	0034
42 0		0029	0029	0030	0031	0031	0032	0032	0033	0033	0034
20		0029	0029	0030	0030	0031	0031	0032	0032	0033	0033
40		0028	0029	0029	0030	0030	0031	0031	0032	0032	0033
43 0		0028	0028	0029	0029	0030	0030	0031	0031	0032	0032
20		0027	0028	0028	0029	0029	0030	0030	0031	0031	0032
40		0027	0027	0028	0028	0029	0029	0030	0030	0031	0031
44 0		0026	0027	0027	0028	0028	0029	0029	0030	0030	0031
20		0026	0026	0027	0027	0028	0028	0029	0029	0030	0030
40		0026	0026	0026	0027	0027	0028	0028	0029	0029	0030
45 0		0025	0026	0026	0027	0027	0027	0028	0028	0029	0029

TABLE V. LOG. A.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.									
	51′	**52′**	**53′**	**54′**	**55′**	**56′**	**57′**	**58′**	**59′**	**60′**
45° 0′	.0025	0026	0026	0027	0027	0027	0028	0028	0029	0029
30	.0025	0025	0025	0026	0026	0027	0027	0028	0028	0028
46 0	.0024	0024	0025	0025	0026	0026	0027	0027	0027	0028
30	.0023	0024	0024	0025	0025	0026	0026	0026	0027	0027
47 0	.0023	0023	0024	0024	0025	0025	0025	0026	0026	0026
30	.0022	0023	0023	0024	0024	0024	0025	0025	0025	0026
48 0	.0022	0022	0023	0023	0023	0024	0024	0024	0025	0025
30	.0021	0022	0022	0022	0023	0023	0024	0024	0024	0025
49 0	.0021	0021	0022	0022	0022	0023	0023	0023	0024	0024
30	.0020	0021	0021	0021	0022	0022	0022	0023	0023	0023
50 0	.0020	0020	0020	0021	0021	0022	0022	0022	0023	0023
30	.0019	0020	0020	0020	0021	0021	0021	0022	0022	0022
51 0	.0019	0019	0020	0020	0020	0020	0021	0021	0021	0022
30	.0018	0019	0019	0019	0020	0020	0020	0021	0021	0021
52 0	.0018	0018	0019	0019	0019	0019	0020	0020	0020	0021
30	.0018	0018	0018	0018	0019	0019	0019	0020	0020	0020
53 0	.0017	0017	0018	0018	0018	0018	0019	0019	0019	0020
30	.0017	0017	0017	0017	0018	0018	0018	0019	0019	0019
54 0	.0016	0016	0017	0017	0017	0018	0018	0018	0018	0019
30	.0016	0016	0016	0017	0017	0017	0017	0018	0018	0018
55 0	.0015	0016	0016	0016	0016	0017	0017	0017	0017	0018
30	.0015	0015	0015	0016	0016	0016	0016	0017	0017	0017
56 0	.0015	0015	0015	0015	0016	0016	0016	0016	0017	0017
30	.0014	0014	0015	0015	0015	0015	0016	0016	0016	0016
57 0	.0014	0014	0014	0015	0015	0015	0015	0015	0016	0016
30	.0014	0014	0014	0014	0014	0015	0015	0015	0015	0015
58 0	.0013	0013	0014	0014	0014	0014	0014	0015	0015	0015
30	.0013	0013	0013	0013	0014	0014	0014	0014	0014	0015
59 0	.0012	0013	0013	0013	0013	0013	0014	0014	0014	0014
30	.0012	0012	0012	0013	0013	0013	0013	0013	0014	0014
60	.0012	0012	0012	0012	0013	0013	0013	0013	0013	0013
61	.0011	0011	0011	0012	0012	0012	0012	0012	0012	0013
62	.0011	0011	0011	0011	0011	0011	0011	0012	0012	0012
63	.0010	0010	0010	0010	0011	0011	0011	0011	0011	0011
64	.0009	0010	0010	0010	0010	0010	0010	0010	0010	0011
65	.0009	0009	0009	0009	0009	0009	0010	0010	0010	0010
66	.0008	0008	0009	0009	0009	0009	0009	0009	0009	0009
67	.0008	0008	0008	0008	0008	0008	0008	0009	0009	0009
68	.0007	0007	0008	0008	0008	0008	0008	0008	0008	0008
69	.0007	0007	0007	0007	0007	0007	0007	0008	0008	0008
70	.0007	0007	0007	0007	0007	0007	0007	0007	0007	0007
71	.0006	0006	0006	0006	0006	0006	0007	0007	0007	0007
72	.0006	0006	0006	0006	0006	0006	0006	0006	0006	0006
73	.0005	0005	0006	0006	0006	0006	0006	0006	0006	0006
74	.0005	0005	0005	0005	0005	0005	0005	0005	0005	0006
75	.0005	0005	0005	0005	0005	0005	0005	0005	0005	0005
76	.0004	0005	0005	0005	0005	0005	0005	0005	0005	0005
77	.0004	0004	0004	0004	0004	0004	0004	0004	0004	0004
78	.0004	0004	0004	0004	0004	0004	0004	0004	0004	0004
79	.0004	0004	0004	0004	0004	0004	0004	0004	0004	0004
80	.0004	0004	0004	0004	0004	0004	0004	0004	0004	0004
81	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
82	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
83	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
84	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
85	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
86	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
87	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
88	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
89	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003
90	.0003	0003	0003	0003	0003	0003	0003	0003	0003	0003

TABLE V. LOG. B.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ⊙ or ✳.	REDUCED REFRACTION AND PARALLAX OF ⊙ OR ✳.											
	0′ 0″	0′ 30″	1′ 0″	1′ 30″	2′ 0″	2′ 30″	3′ 0″	3′ 30″	4′ 0″	4′ 30″	5′ 0″	5′ 30″
5° 0′												
10												
20												
30												
40												
50												
6 0												
20												9.9970
40												9.9972
7 0											9.9976	9.9974
20											9.9977	9.9975
40										9.9981	9.9978	9.9976
8 0										9.9982	9.9979	9.9977
20										9.9982	9.9980	9.9978
40										9.9983	9.9981	9.9979
9 0									9.9986	9.9984	9.9982	9.9980
20									9.9986	9.9985	9.9983	9.9981
40									9.9987	9.9985	9.9983	9.9982
10 0								9.9989	9.9988	9.9986	9.9984	9.9982
11							9.9992	9.9991	9.9989	9.9987	9.9986	9.9984
12							9.9993	9.9992	9.9990	9.9989	9.9987	9.9986
13						9.9995	9.9994	9.9992	9.9991	9.9990	9.9989	9.9987
14						9.9995	9.9994	9.9993	9.9992	9.9991	9.9990	
15					9.9997	9.9996	9.9995	9.9994	9.9993	9.9992	9.9991	
16					9.9997	9.9996	9.9995	9.9994	9.9993	9.9993		
18				9.9990	9.9998	9.9997	9.9996	9.9995	9.9995			
20			0.0000	9.9999	9.9998	9.9998	9.9997	9.9996	9.9996			
25			0.0000	0.0000	9.9999	9.9999	9.9998	9.9998				
30		0 0001	0.0001	0.0000	0.0000	0.0000	9.9999					
50	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001						
90	0.0001	0.0002	0.0002	0.0002								

LOG. C.

App. Alt. of ⊙ or ✳.	REDUCED REFRACTION AND PARALLAX OF ⊙ OR ✳.											
	0′ 0″	0′ 30″	1′ 0″	1′ 30″	2′ 0″	2′ 30″	3′ 0″	3′ 30″	4′ 0″	4′ 30″	5′ 0″	5′ 30″
5° 0′												
20												
40												
6 0												
20												9.9969
40												9.9970
7 0											9.9974	9.9972
8										9.9980	9.9978	9.9975
9									9.9984	9.9982	9.9980	9.9978
10								9.9988	9.9986	9.9984	9.9982	9.9981
11							9.9990	9.9989	9.9987	9.9986	9.9984	9.9982
12							9.9991	9.9990	9.9988	9.9987	9.9985	9.9984
13						9.9993	9.9992	9.9991	9.9989	9.9988	9.9987	9.9985
14						9.9994	9.9993	9.9991	9.9990	9.9989	9.9988	
15					9.9995	9.9994	9.9993	9.9992	9.9991	9.9990	9.9989	
16					9.9996	9.9995	9.9994	9.9993	9.9992	9.9990		
17					9.9996	9.9995	9.9994	9.9993	9.9992	9.9991		
18				9.9997	9.9996	9.9995	9.9994	9.9994	9.9993			
20			9.9998	9.9998	9.9997	9.9996	9.9995	9.9994	9.9993			
25			9.9999	9.9998	9.9998	9.9997	9.9996	9.9996				
30		0.0000	9.9999	9.9999	9.9998	9.9998	9.9997					
40		0.0000	9.9999	9.9999	9.9999	9.9999						
50	0.0000	0.0000	0.0000	9.9999	9.9999							
90	0.0000	0.0000	0.0000	0.0000								

TABLE V. LOG. B.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ⊙ or ✱.	REDUCED REFRACTION AND PARALLAX OF ⊙ OR ✱.											
	6′ 0″	6′ 30″	7′ 0″	7′ 30″	8′ 0″	8′ 30″	9′ 0″	9′ 30″	10′ 0″	10′ 30″	11′ 0″	11′ 30″
5° 0′			9.9951	9.9947	9.9944	9.9940	9.9937	9.9933	9.9929	9.9926	9.9922	9.9919
10			9.9953	9.9949	9.9946	9.9942	9.9939	9.9935	9.9932	9.9928	9.9925	9.9921
20			9.9954	9.9951	9.9948	9.9944	9.9941	9.9937	9.9934	9.9931	9.9927	9.9924
30		9.9959	9.9956	9.9952	9.9949	9.9946	9.9943	9.9939	9.9936	9.9933	9.9929	
40		9.9960	9.9957	9.9954	9.9951	9.9948	9.9944	9.9941	9.9938	9.9935	9.9932	
50	9.9965	9.9962	9.9958	9.9955	9.9952	9.9949	9.9946	9.9943	9.9940	9.9937		
6 0	9.9966	9.9963	9.9960	9.9957	9.9954	9.9951	9.9948	9.9945	9.9942	9.9939		
20	9.9968	9.9965	9.9962	9.9959	9.9956	9.9954	9.9951	9.9948	9.9945			
40	9.9969	9.9967	9.9964	9.9961	9.9959	9.9956	9.9953	9.9951	9.9948			
7 0	9.9971	9.9968	9.9966	9.9963	9.9961	9.9958	9.9956	9.9953				
20	9.9972	9.9970	9.9968	9.9965	9.9963	9.9960	9.9958					
40	9.9974	9.9971	9.9969	9.9967	9.9965	9.9962						
8 0	9.9975	9.9973	9.9971	9.9968	9.9966	9.9964						
20	9.9976	9.9974	9.9972	9.9970	9.9968							
40	9.9977	9.9975	9.9973	9.9971								
9 0	9.9978	9.9976	9.9974	9.9972								
20	9.9979	9.9977	9.9975									
40	9.9980	9.9978	9.9976									
10	9.9981	9.9979	9.9977									
11	9.9983	9.9981										
12	9.9985											
13												
14												
15												
16												
18												
20												
25												
30												
50												
90												

LOG. C.

App. Alt. of ⊙ or ✱.	REDUCED REFRACTION AND PARALLAX OF ⊙ OR ✱.											
	6′ 0″	6′ 30″	7′ 0″	7′ 30″	8′ 0″	8′ 30″	9′ 0″	9′ 30″	10′ 0″	10′ 30″	11′ 0″	11′ 30″
5° 0′			9.9949	9.9946	9.9942	9.9938	9.9935	9.9931	9.9927	9.9924	9.9920	9.9916
20		9.9956	9.9953	9.9949	9.9946	9.9942	9.9939	9.9936	9.9932	9.9929	9.9925	9.9922
40	9.9962	9.9959	9.9955	9.9952	9.9949	9.9946	9.9943	9.9939	9.9936	9.9933	9.9930	
6 0	9.9964	9.9961	9.9958	9.9955	9.9952	9.9949	9.9946	9.9943	9.9940	9.9937		
20	9.9966	9.9963	9.9960	9.9957	9.9955	9.9952	9.9949	9.9946	9.9943			
40	9.9968	9.9965	9.9962	9.9960	9.9957	9.9954	9.9951	9.9949	9.9946			
7	9.9969	9.9967	9.9964	9.9962	9.9959	9.9956	9.9954	9.9951				
8	9.9973	9.9971	9.9969	9.9966	9.9964	9.9962	9.9960					
9	9.9976	9.9974	9.9972	9.9970	9.9968							
10	9.9979	9.9977	9.9975									
11	9.9981	9.9979										
12	9.9983											
13												
14												
15												
16												
17												
18												
20												
25												
30												
40												
50												
90												

TABLE V. LOG. D.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.														
	41′	42′	43′	44′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′
5° 0′	.0283	0290	0296	0303	0310	0316	0323	0329	0336	0343	0349	0356	0362	0369	
3	.0280	0287	0293	0300	0307	0313	0320	0326	0333	0339	0346	0352	0359	0365	
6	.0277	0284	0291	0297	0304	0310	0317	0323	0330	0336	0342	0349	0355	0362	
9	.0275	0281	0288	0294	0301	0307	0313	0320	0326	0333	0339	0345	0352	0358	
12	.0272	0279	0285	0291	0298	0304	0310	0317	0323	0330	0336	0342	0349	0355	
5 15	.0270	0276	0282	0289	0295	0301	0308	0314	0320	0326	0333	0339	0345	0351	
18	.0267	0273	0280	0286	0292	0298	0305	0311	0317	0323	0330	0336	0342	0348	
21	.0264	0271	0277	0283	0289	0296	0302	0308	0314	0320	0327	0333	0339	0345	
24	.0262	0268	0274	0281	0287	0293	0299	0305	0311	0317	0324	0330	0336	0342	
27	.0260	0266	0272	0278	0284	0290	0296	0302	0308	0314	0321	0327	0333	0339	
5 30	.0257	0263	0269	0275	0282	0288	0294	0300	0306	0312	0318	0324	0330	0336	
33	.0255	0261	0267	0273	0279	0285	0291	0297	0303	0309	0315	0321	0327	0333	
36	.0253	0259	0265	0271	0276	0282	0288	0294	0300	0306	0312	0318	0324	0330	
39		0256	0262	0268	0274	0280	0286	0292	0298	0303	0309	0315	0321	0327	
42		0254	0260	0266	0272	0277	0283	0289	0295	0301	0306	0312	0318	0324	
5 45		0252	0258	0263	0269	0275	0281	0287	0292	0298	0304	0310	0315	0321	
48		0250	0255	0261	0267	0273	0278	0284	0290	0295	0301	0307	0313	0318	
51		0247	0253	0259	0265	0270	0276	0282	0287	0293	0299	0304	0310	0316	
54		0245	0251	0257	0262	0268	0274	0279	0285	0290	0296	0302	0307	0313	
57		0243	0249	0254	0260	0266	0271	0277	0282	0288	0294	0299	0305	0310	
6 0		0241	0247	0252	0258	0263	0269	0275	0280	0286	0291	0297	0302	0308	
3		0239	0245	0250	0256	0261	0267	0272	0278	0283	0289	0294	0300	0305	
6		0237	0243	0248	0254	0259	0265	0270	0275	0281	0286	0292	0297	0302	
9		0235	0241	0246	0252	0257	0262	0268	0273	0279	0284	0289	0295	0300	
12		0233	0239	0244	0249	0255	0260	0266	0271	0276	0282	0287	0292	0298	
6 15		0231	0237	0242	0247	0253	0258	0263	0269	0274	0279	0285	0290	0295	
18		0230	0235	0240	0245	0251	0256	0261	0267	0272	0277	0282	0288	0293	
21		0228	0233	0238	0243	0249	0254	0259	0264	0270	0275	0280	0285	0290	
24		0226	0231	0236	0242	0247	0252	0257	0262	0267	0273	0278	0283	0288	
27			0229	0234	0240	0245	0250	0255	0260	0265	0271	0276	0281	0286	0291
6 30			0227	0233	0238	0243	0248	0253	0258	0263	0268	0274	0279	0284	0289
33			0226	0231	0236	0241	0246	0251	0256	0261	0266	0271	0276	0281	0287
36			0224	0229	0234	0239	0244	0249	0254	0259	0264	0269	0274	0279	0284
39			0222	0227	0232	0237	0242	0247	0252	0257	0262	0267	0272	0277	0282
42			0220	0225	0230	0235	0240	0245	0250	0255	0260	0265	0270	0275	0280
6 45			0219	0224	0229	0234	0239	0244	0248	0253	0258	0263	0268	0273	0278
48			0217	0222	0227	0232	0237	0242	0247	0251	0256	0261	0266	0271	0276
51			0216	0220	0225	0230	0235	0240	0245	0250	0254	0259	0264	0269	0274
54			0214	0219	0224	0228	0233	0238	0243	0248	0253	0257	0262	0267	1272
57			0212	0217	0222	0227	0232	0236	0241	0246	0251	0255	0260	0265	0270
7 0			0211	0216	0220	0225	0230	0235	0239	0244	0249	0254	0258	0263	0268
3			0209	0214	0219	0223	0228	0233	0238	0242	0247	0252	0256	0261	0266
6			0208	0212	0217	0222	0227	0231	0236	0241	0245	0250	0255	0259	0264
9				0211	0216	0220	0225	0230	0234	0239	0243	0248	0253	0257	0262
12				0209	0214	0219	0223	0228	0232	0237	0242	0246	0251	0255	0260
7 15				0208	0212	0217	0222	0226	0231	0235	0240	0245	0249	0254	0258
18				0206	0211	0216	0220	0225	0229	0234	0238	0243	0247	0252	0256
21				0205	0209	0214	0219	0223	0228	0232	0237	0241	0246	0250	0255
24				0204	0208	0213	0217	0222	0226	0230	0235	0239	0244	0248	0253
27				0202	0207	0211	0216	0220	0224	0229	0233	0238	0242	0247	0251
7 30				0201	0205	0210	0214	0218	0223	0227	0232	0236	0241	0245	0249
33				0199	0204	0208	0213	0217	0221	0226	0230	0234	0239	0243	0248
36				0198	0202	0207	0211	0215	0220	0224	0229	0233	0237	0242	0246
39				0197	0201	0205	0210	0214	0218	0223	0227	0231	0236	0240	0244
42				0195	0200	0204	0208	0213	0217	0221	0225	0230	0234	0238	0243
7 45				0194	0198	0203	0207	0211	0215	0220	0224	0228	0232	0237	0241
48				0193	0197	0201	0205	0210	0214	0218	0222	0227	0231	0235	0239
51				0191	0196	0200	0204	0208	0213	0217	0221	0225	0229	0234	0238
54				0190	0194	0198	0203	0207	0211	0215	0219	0224	0228	0232	0236
57				0189	0193	0197	0201	0206	0210	0214	0218	0222	0226	0230	0235
8 0				0188	0192	0196	0200	0204	0208	0212	0217	0221	0225	0229	0233

TABLE V. LOG. D.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.													
	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′
8° 0′	.0192	0196	0200	0204	0208	0212	0217	0221	0225	0229	0233	0237		
5	.0190	0194	0198	0202	0206	0210	0214	0218	0222	0227	0231	0235		
10	.0188	0192	0196	0200	0204	0208	0212	0216	0220	0224	0228	0232		
15	.0186	0190	0194	0198	0202	0206	0210	0214	0218	0222	0226	0230		
20	.0184	0188	0192	0196	0200	0204	0207	0211	0215	0219	0223	0227		
25	.0182	0186	0190	0194	0197	0201	0205	0209	0213	0217	0221	0225		
8 30	.0180	0184	0188	0192	0195	0199	0203	0207	0211	0215	0219	0223		
35	.0178	0182	0186	0190	0193	0197	0201	0205	0209	0213	0216	0220		
40	.0176	0180	0184	0188	0191	0195	0199	0203	0207	0210	0214	0218		
45	.0174	0178	0182	0186	0189	0193	0197	0201	0205	0208	0212	0216		
50	.0173	0176	0180	0184	0188	0191	0195	0199	0202	0206	0210	0214		
55	.0171	0175	0178	0182	0186	0189	0193	0197	0200	0204	0208	0212		
9 0	.0169	0173	0177	0180	0184	0188	0191	0195	0198	0202	0206	0209		
5	.0167	0171	0175	0178	0182	0186	0189	0193	0197	0200	0204	0207		
10	.0166	0169	0173	0177	0180	0184	0187	0191	0195	0198	0202	0205		
15	.0164	0168	0171	0175	0179	0182	0186	0189	0193	0196	0200	0203		
20	.0163	0166	0170	0173	0177	0180	0184	0187	0191	0194	0198	0201		
25	.0161	0165	0168	0172	0175	0179	0182	0186	0189	0193	0196	0199		
9 30		0163	0166	0170	0173	0177	0180	0184	0187	0191	0194	0198		
35		0161	0165	0168	0172	0175	0179	0182	0185	0189	0192	0196		
40		0160	0163	0167	0170	0174	0177	0180	0184	0187	0191	0194		
45		0158	0162	0165	0169	0172	0175	0179	0182	0185	0189	0192	0195	
50		0157	0160	0164	0167	0170	0174	0177	0180	0184	0187	0190	0194	
55		0156	0159	0162	0165	0169	0172	0175	0179	0182	0185	0189	0192	
10 0		0154	0157	0161	0164	0167	0171	0174	0177	0180	0184	0187	0190	
5		0153	0156	0159	0162	0166	0169	0172	0175	0179	0182	0185	0188	
10		0151	0155	0158	0161	0164	0167	0171	0174	0177	0180	0183	0187	
15		0150	0153	0156	0160	0163	0166	0169	0172	0175	0179	0182	0185	
20		0149	0152	0155	0158	0161	0164	0168	0171	0174	0177	0180	0183	
25		0147	0150	0154	0157	0160	0163	0166	0169	0172	0175	0179	0182	
10 30		0146	0149	0152	0155	0158	0162	0165	0168	0171	0174	0177	0180	
35		0145	0148	0151	0154	0157	0160	0163	0166	0169	0172	0175	0179	
40		0143	0147	0150	0153	0156	0159	0162	0165	0168	0171	0174	0177	
45		0142	0145	0148	0151	0154	0157	0160	0163	0166	0169	0172	0175	
50		0141	0144	0147	0150	0153	0156	0159	0162	0165	0168	0171	0174	
55		0140	0143	0146	0149	0152	0155	0158	0161	0164	0167	0170	0172	
11 0		0139	0142	0145	0147	0150	0153	0156	0159	0162	0165	0168	0171	
5		0137	0140	0143	0146	0149	0152	0155	0158	0161	0164	0167	0170	
10			0139	0142	0145	0148	0151	0154	0157	0159	0162	0165	0168	
15			0138	0141	0144	0147	0150	0152	0155	0158	0161	0164	0167	
20			0137	0140	0143	0145	0148	0151	0154	0157	0160	0163	0165	
25			0136	0139	0141	0144	0147	0150	0153	0156	0158	0161	0164	
11 30			0135	0137	0140	0143	0146	0149	0151	0154	0157	0160	0163	
35			0133	0136	0139	0142	0145	0147	0150	0153	0156	0159	0161	
40			0132	0135	0138	0141	0143	0146	0149	0152	0154	0157	0160	
45			0131	0134	0137	0140	0142	0145	0148	0150	0153	0156	0159	
50			0130	0133	0136	0138	0141	0144	0147	0149	0152	0155	0157	
55			0129	0132	0135	0137	0140	0143	0145	0148	0151	0153	0156	
12 0			0128	0131	0134	0136	0139	0142	0144	0147	0150	0152	0155	
5			0127	0130	0132	0135	0138	0140	0143	0146	0148	0151	0154	
10			0126	0129	0131	0134	0137	0139	0142	0145	0147	0150	0152	
15			0125	0128	0130	0133	0136	0138	0141	0143	0146	0149	0151	
20			0124	0127	0129	0132	0135	0137	0140	0142	0145	0147	0150	
25			0123	0126	0128	0131	0133	0136	0139	0141	0144	0146	0149	
12 30			0122	0125	0127	0130	0132	0135	0138	0140	0143	0145	0148	
35			0121	0124	0126	0129	0131	0134	0136	0139	0141	0144	0147	
40			0120	0123	0125	0128	0130	0133	0135	0138	0140	0143	0145	
45			0119	0122	0124	0127	0129	0132	0134	0137	0139	0142	0144	0147
50			0118	0121	0123	0126	0128	0131	0133	0136	0138	0141	0143	0146
55			0118	0120	0123	0125	0127	0130	0132	0135	0137	0140	0142	0145
13 0			0117	0119	0122	0124	0126	0129	0131	0134	0136	0139	0141	0143

TABLE V. LOG. D.

Logs. A, B, C, and D, for Lunars.

App. Alt. of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.											
	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
13° 0′	.0117	0119	0122	0124	0126	0129	0131	0134	0136	0139	0141	0143	
10	.0115	0117	0120	0122	0125	0127	0129	0132	0134	0137	0139	0141	
20	.0113	0116	0118	0120	0123	0125	0127	0130	0132	0134	0137	0139	
30	.0112	0114	0116	0119	0121	0123	0125	0128	0130	0132	0135	0137	
40		0112	0114	0117	0119	0121	0124	0126	0128	0131	0133	0135	
50		0111	0113	0115	0117	0120	0122	0124	0126	0129	0131	0133	
14 0		0109	0111	0113	0116	0118	0120	0122	0125	0127	0129	0131	
10		0107	0110	0112	0114	0116	0118	0121	0123	0125	0127	0129	
20		0106	0108	0110	0112	0114	0117	0119	0121	0123	0125	0127	
30		0104	0106	0109	0111	0113	0115	0117	0119	0121	0123	0126	
40		0103	0105	0107	0109	0111	0113	0115	0118	0120	0122	0124	
50		0101	0103	0106	0108	0110	0112	0114	0116	0118	0120	0122	
15 0		0100	0102	0104	0106	0108	0110	0112	0114	0116	0118	0120	
10		0099	0101	0103	0105	0107	0109	0111	0113	0115	0117	0119	
20		0097	0099	0101	0103	0105	0107	0109	0111	0113	0115	0117	
30		0096	0098	0100	0102	0104	0106	0108	0110	0112	0113	0115	
40		0094	0096	0098	0100	0102	0104	0106	0108	0110	0112	0114	
50		0093	0095	0097	0099	0101	0103	0105	0107	0108	0110	0112	
16 0		0092	0094	0096	0098	0099	0101	0103	0105	0107	0109	0111	
10		0091	0093	0094	0096	0098	0100	0102	0104	0106	0107	0109	
20		0089	0091	0093	0095	0097	0099	0100	0102	0104	0106	0108	
30		0088	0090	0092	0094	0096	0097	0099	0101	0103	0105	0106	
40		0087	0089	0091	0092	0094	0096	0098	0100	0101	0103	0105	
50		0086	0088	0089	0091	0093	0095	0096	0098	0100	0102	0104	
17 0		0085	0087	0088	0090	0092	0093	0095	0097	0099	0100	0102	
10		0084	0085	0087	0089	0091	0092	0094	0096	0097	0099	0101	
20		0083	0084	0086	0088	0089	0091	0093	0094	0096	0098	0099	
30			0083	0085	0086	0088	0090	0091	0093	0095	0096	0098	
40			0082	0084	0085	0087	0089	0090	0092	0094	0095	0097	
50			0081	0083	0084	0086	0087	0089	0091	0092	0094	0096	
18 0			0080	0082	0083	0085	0086	0088	0090	0091	0093	0094	
20			0078	0079	0081	0083	0084	0086	0087	0089	0090	0092	0093
40			0076	0077	0079	0080	0082	0083	0085	0087	0088	0090	0091
19 0			0074	0075	0077	0078	0080	0081	0083	0084	0086	0087	0089
20			0072	0073	0075	0076	0078	0079	0081	0082	0084	0085	0086
40			0070	0072	0073	0074	0076	0077	0079	0080	0081	0083	0084
20 0			0068	0070	0071	0073	0074	0075	0077	0078	0079	0081	0082
20			0067	0068	0069	0071	0072	0073	0075	0076	0077	0079	0080
40			0065	0066	0068	0069	0070	0072	0073	0074	0075	0077	0078
21 0			0063	0065	0066	0067	0068	0070	0071	0072	0074	0075	0076
20			0062	0063	0064	0065	0067	0068	0069	0070	0072	0073	0074
40			0060	0061	0063	0064	0065	0066	0067	0069	0070	0071	0072
22 0			0059	0060	0061	0062	0063	0065	0066	0067	0068	0069	0070
20			0057	0058	0059	0061	0062	0063	0064	0065	0066	0068	0069
40			0056	0057	0058	0059	0060	0061	0062	0064	0065	0066	0067
23 0			0054	0055	0057	0058	0059	0060	0061	0062	0063	0064	0065
20			0053	0054	0055	0056	0057	0058	0059	0060	0061	0063	0064
40			0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	0062
24 0			0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	0060
20				0050	0051	0052	0053	0054	0055	0056	0057	0058	0059
40				0049	0050	0051	0052	0053	0053	0054	0055	0056	0057
25 0				0047	0048	0049	0050	0051	0052	0053	0054	0055	0056
20				0046	0047	0048	0049	0050	0051	0052	0053	0053	0054
40				0045	0046	0047	0048	0049	0049	0050	0051	0052	0053
26 0				0044	0045	0046	0046	0047	0048	0049	0050	0051	0052
20				0043	0043	0044	0045	0046	0047	0048	0048	0049	0050
40				0041	0042	0043	0044	0045	0046	0046	0047	0048	0049
27 0				0040	0041	0042	0043	0044	0044	0045	0046	0047	0047
20				0039	0040	0041	0042	0042	0043	0044	0045	0045	0046
40				0038	0039	0040	0040	0041	0042	0043	0043	0044	0045
28 0				0037	0038	0039	0039	0040	0041	0042	0042	0043	0044

TABLE V. LOG. D.

Logs. A, B, C, and D, for Lunars.

Apparent Altitude of ☽.	REDUCED PARALLAX AND REFRACTION OF ☽.									
	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	60′
28° 0′	0.0037	0.0038	0.0039	0.0039	0.0040	0.0041	0.0042	0.0042	0.0043	0.0044	
30	0.0036	0.0036	0.0037	0.0038	0.0038	0.0039	0.0040	0.0040	0.0041	0.0042	
29 0	0.0034	0.0035	0.0035	0.0036	0.0037	0.0037	0.0038	0.0039	0.0039	0.0040	
30	0.0033	0.0033	0.0034	0.0035	0.0035	0.0036	0.0036	0.0037	0.0038	0.0038	
30 0	0.0031	0.0032	0.0032	0.0033	0.0034	0.0034	0.0035	0.0035	0.0036	0.0037	
30	0.0030	0.0030	0.0031	0.0031	0.0032	0.0033	0.0033	0.0034	0.0034	0.0035	
31 0	0.0028	0.0029	0.0029	0.0030	0.0031	0.0031	0.0032	0.0032	0.0033	0.0033	
30	0.0027	0.0028	0.0028	0.0029	0.0029	0.0030	0.0030	0.0031	0.0031	0.0032	0.0032
32 0	0.0026	0.0026	0.0027	0.0027	0.0028	0.0028	0.0029	0.0029	0.0030	0.0030	0.0031
30	0.0024	0.0025	0.0025	0.0026	0.0026	0.0027	0.0027	0.0028	0.0028	0.0029	0.0029
33 0	0.0023	0.0024	0.0024	0.0025	0.0025	0.0025	0.0026	0.0026	0.0027	0.0027	0.0028
30	0.0022	0.0022	0.0023	0.0023	0.0024	0.0024	0.0025	0.0025	0.0025	0.0026	0.0026
34 0	0.0021	0.0021	0.0022	0.0022	0.0022	0.0023	0.0023	0.0024	0.0024	0.0024	0.0025
30	0.0020	0.0020	0.0020	0.0021	0.0021	0.0022	0.0022	0.0022	0.0023	0.0023	0.0023
35 0	0.0018	0.0019	0.0019	0.0020	0.0020	0.0020	0.0021	0.0021	0.0021	0.0022	0.0022
30	0.0017	0.0018	0.0018	0.0018	0.0019	0.0019	0.0019	0.0020	0.0020	0.0020	0.0021
36 0	0.0016	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018	0.0019	0.0019	0.0019	0.0019
30	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018
37 0	0.0014	0.0014	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0017
30	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016
38 0	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0014
30	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013	0.0013
39 0	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0012
30		0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011
40		0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010
41		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008
42		0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0006
43		0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0004
44		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
45		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
46		9.9998	9.9998	9.9998	9.9998	9.9998	9.9998	9.9998	9.9998	9.9998	9.9998
47		9.9997	9.9997	9.9997	9.9997	9.9996	9.9996	9.9996	9.9996	9.9996	9.9996
48		9.9995	9.9995	9.9995	9.9995	9.9995	9.9995	9.9995	9.9995	9.9994	9.9994
49		9.9994	9.9994	9.9994	9.9993	9.9993	9.9993	9.9993	9.9993	9.9993	9.9993
50		9.9992	9.9992	9.9992	9.9992	9.9992	9.9992	9.9992	9.9991	9.9991	9.9991
51		9.9991	9.9991	9.9991	9.9991	9.9990	9.9990	9.9990	9.9990	9.9990	9.9990
52		9.9990	9.9990	9.9990	9.9989	9.9989	9.9989	9.9989	9.9989	9.9988	9.9988
53		9.9989	9.9988	9.9988	9.9988	9.9988	9.9988	9.9987	9.9987	9.9987	9.9987
54		9.9988	9.9987	9.9987	9.9987	9.9987	9.9986	9.9986	9.9986	9.9986	9.9985
55		9.9986	9.9986	9.9986	9.9986	9.9985	9.9985	9.9985	9.9984	9.9984	9.9984
56		9.9985	9.9985	9.9985	9.9984	9.9984	9.9984	9.9984	9.9983	9.9983	9.9983
57		9.9984	9.9984	9.9984	9.9983	9.9983	9.9983	9.9982	9.9982	9.9982	9.9981
58		9.9983	9.9983	9.9983	9.9982	9.9982	9.9982	9.9981	9.9981	9.9981	9.9980
59		9.9982	9.9982	9.9981	9.9981	9.9981	9.9980	9.9980	9.9980	9.9979	9.9979
60		9.9981	9.9981	9.9980	9.9980	9.9980	9.9979	9.9979	9.9979	9.9978	9.9978
61		9.9980	9.9980	9.9980	9.9979	9.9979	9.9978	9.9978	9.9978	9.9977	9.9977
62		9.9979	9.9979	9.9979	9.9978	9.9978	9.9977	9.9977	9.9977	9.9976	9.9976
63		9.9979	9.9978	9.9978	9.9977	9.9977	9.9976	9.9976	9.9976	9.9975	9.9975
64		9.9978	9.9977	9.9977	9.9976	9.9976	9.9976	9.9975	9.9975	9.9974	9.9974
65		9.9977	9.9977	9.9976	9.9976	9.9975	9.9975	9.9974	9.9974	9.9973	9.9972
66		9.9976	9.9976	9.9975	9.9975	9.9974	9.9974	9.9973	9.9973	9.9973	9.9972
67		9.9976	9.9975	9.9975	9.9974	9.9974	9.9973	9.9973	9.9972	9.9972	9.9971
68		9.9975	9.9974	9.9974	9.9973	9.9973	9.9972	9.9972	9.9971	9.9971	9.9970
69		9.9974	9.9974	9.9973	9.9973	9.9972	9.9972	9.9971	9.9971	9.9970	9.9970
70		9.9974	9.9973	9.9973	9.9972	9.9972	9.9971	9.9970	9.9970	9.9969	9.9969
72		9.9972	9.9972	9.9971	9.9971	9.9970	9.9970	9.9969	9.9969	9.9968	9.9968
74		9.9971	9.9971	9.9970	9.9970	9.9969	9.9969	9.9968	9.9968	9.9967	9.9966
76		9.9971	9.9970	9.9969	9.9969	9.9968	9.9968	9.9967	9.9966	9.9966	9.9965
78		9.9970	9.9969	9.9969	9.9968	9.9967	9.9967	9.9966	9.9966	9.9965	9.9964
80		9.9969	9.9969	9.9968	9.9967	9.9967	9.9966	9.9965	9.9965	9.9964	9.9964
90		9.9968	9.9967	9.9966	9.9966	9.9965	9.9964	9.9964	9.9963	9.9963	9.9962

TABLE VI.

Second Correction of the Lunar Distance.

Apparent Distance.	FIRST CORRECTION OF DISTANCE.																								Apparent Distance.
	3′	7′	10′	12′	14′	16′	18′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	36′	
Subtr.	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	Add.
15° 0′	0	2	3	5	6	8	11	13	14	16	17	19	20	22	24	26	27	29	33	33	35	38	40	42	
30	0	2	3	5	6	8	10	13	14	15	17	18	20	21	23	25	26	28	32	32	34	36	39	41	
16 0	0	1	3	4	6	8	10	12	13	15	16	18	19	21	22	24	26	27	31	31	33	35	37	39	
30	0	1	3	4	6	8	10	12	13	14	16	17	18	20	21	23	25	27	30	30	32	34	36	38	
17 0	0	1	3	4	6	7	9	11	13	14	15	16	18	19	21	22	24	26	29	29	31	33	35	37	
30	0	1	3	4	5	7	9	11	12	13	15	16	17	19	20	22	23	25	28	28	30	32	34	36	
18 0	0	1	3	4	5	7	9	11	12	13	14	15	17	18	20	21	23	24	28	28	29	31	33	35	
30	0	1	3	4	5	7	8	10	12	13	14	15	16	18	19	20	22	23	27	27	28	30	32	34	
19 0	0	1	3	4	5	6	8	10	11	12	13	15	16	17	18	20	21	23	26	26	28	29	31	33	
30	0	1	2	4	5	6	8	10	11	12	13	14	15	17	18	19	21	22	25	25	27	28	30	32	
20 0	0	1	2	3	5	6	8	10	11	12	13	14	15	16	17	19	20	22	25	25	26	28	29	31	
21	0	1	2	3	4	6	7	9	10	11	12	13	14	15	17	18	19	20	23	23	25	26	28	29	
22	0	1	2	3	4	6	7	9	10	10	11	12	14	15	16	17	18	19	22	22	24	25	26	28	
23	0	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	19	21	21	22	24	25	27	
24	0	1	2	3	4	5	6	8	9	9	10	11	12	13	14	15	16	18	20	20	21	23	24	25	
25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	19	20	22	23	24	
26	0	1	2	3	4	5	6	7	8	9	9	10	11	12	13	14	15	16	18	18	19	21	22	23	
27	0	1	2	2	3	4	6	7	8	8	9	10	11	12	12	13	14	15	18	18	19	20	21	22	
28	0	1	2	2	3	4	5	7	7	8	9	9	10	11	12	13	14	15	17	17	18	19	20	21	
29	0	1	2	2	3	4	5	6	7	8	8	9	10	11	11	12	13	14	16	16	17	18	19	20	
30	0	1	2	2	3	4	5	6	7	7	8	9	9	10	11	12	13	14	15	15	16	17	19	20	
31	0	1	1	2	3	4	5	6	6	7	8	8	9	10	11	11	12	13	15	15	16	17	18	19	
32	0	1	1	2	3	4	5	6	6	7	7	8	9	9	10	11	12	13	14	14	15	16	17	18	
33	0	1	1	2	3	3	4	5	6	7	7	8	8	9	10	11	11	12	14	14	15	16	16	17	
34	0	1	1	2	3	3	4	5	6	6	7	7	8	9	9	10	11	12	13	13	14	15	16	17	
35	0	1	1	2	2	3	4	5	5	6	7	7	8	8	9	10	10	11	13	13	14	14	15	16	
36	0	1	1	2	2	3	4	5	5	6	6	7	8	8	9	9	10	11	12	12	13	14	15	16	
37	0	1	1	2	2	3	4	5	5	6	6	7	7	8	8	9	10	10	12	12	13	13	14	15	
38	0	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	13	14	14	
39	0	1	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	10	11	11	12	12	13	14	
40	0	1	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	9	11	11	11	12	13	13	140°
42	0	0	1	1	2	2	3	4	4	5	5	6	6	7	7	8	8	9	10	10	11	11	12	13	138
44	0	0	1	1	2	2	3	4	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	136
46	0	0	1	1	2	2	3	3	4	4	4	5	5	6	6	7	7	8	9	9	9	10	10	11	134
48	0	0	1	1	2	2	3	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	132
50	0	0	1	1	1	2	2	3	3	4	4	4	5	5	5	6	6	7	8	8	8	8	9	9	130
52	0	0	1	1	1	2	2	3	3	3	4	4	4	5	5	5	6	6	7	7	7	8	8	9	128
54	0	0	1	1	1	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	7	7	8	8	126
56	0	0	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	7	7	8	124
58	0	0	1	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5	6	6	6	6	7	7	122
60	0	0	0	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	6	6	7	120
62	0	0	0	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	6	6	118
64	0	0	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	116
66	0	0	0	1	1	1	1	2	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	114
68	0	0	0	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	112
70	0	0	0	0	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	110
74	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	106
78	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	102
82	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	98
86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	94
90°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90°
Apparent Distance.	3′	7′	10′	12′	14′	16′	18′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	36′	Apparent Distance.
	FIRST CORRECTION OF DISTANCE.																								

TABLE VI.

Second Correction of the Lunar Distance.

Apparent Distance.	FIRST CORRECTION OF DISTANCE.																							Apparent Distance.
	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	60′	
Subtr	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	Add.
15° 0′	45	47	50	52	55	57	60	63	66	69	72	75	78	81	85	88	91	95	99	102	106	110	113	117	
30	43	45	48	50	53	56	58	61	64	67	70	72	76	79	82	85	88	92	95	99	102	106	110	113	
16 0	42	44	46	49	51	54	56	59	62	64	67	70	73	76	79	82	85	89	92	95	99	102	106	110	
30	40	43	45	47	50	52	54	57	60	62	65	68	71	74	77	80	83	86	89	92	96	99	103	106	
17 0	39	41	43	46	48	50	53	55	58	60	63	66	69	71	74	77	80	83	86	90	93	96	99	103	
30	38	40	42	44	47	49	51	54	56	59	61	64	66	69	72	75	78	81	84	87	90	93	96	100	
18 0	37	39	41	43	45	47	50	52	54	57	59	62	64	67	70	73	75	78	81	84	87	90	94	97	
30	36	38	40	42	44	46	48	50	53	55	58	60	63	65	68	71	73	76	79	82	85	88	91	94	
19 0	35	37	39	41	43	45	47	49	51	54	56	58	61	63	66	69	71	74	77	79	82	85	88	91	
30	34	36	37	39	41	43	46	48	50	52	54	57	59	62	64	67	69	72	75	77	80	83	86	89	
20	33	35	36	38	40	42	44	46	49	51	53	55	58	60	62	65	67	70	73	75	78	81	83	86	
21	31	33	35	36	38	40	42	44	46	48	50	52	55	57	59	61	64	66	69	71	74	76	79	82	
22	30	31	33	35	36	38	40	42	44	46	48	50	52	54	56	58	61	63	65	68	70	73	75	78	
23	28	30	31	33	35	36	38	40	42	44	45	47	49	51	53	56	58	60	62	64	67	69	72	74	
24	27	28	30	31	33	35	36	38	40	41	43	45	47	49	51	53	55	57	59	61	64	66	68	71	
25	26	27	28	30	31	33	35	36	38	40	41	43	45	47	49	51	53	55	57	59	61	63	65	67	
26	25	26	27	29	30	32	33	35	36	38	40	41	43	45	47	48	50	52	54	56	58	60	62	64	
27	23	25	26	27	29	30	32	33	35	36	38	39	41	43	45	46	48	50	52	54	56	58	60	62	
28	22	24	25	26	28	29	30	32	33	35	36	38	39	41	43	44	46	48	50	51	53	55	57	59	
29	22	23	24	25	26	28	29	30	32	33	35	36	38	39	41	43	44	46	48	49	51	53	55	57	
30	21	22	23	24	25	27	28	29	31	32	33	35	36	38	39	41	42	44	46	47	49	51	53	54	
31	20	21	22	23	24	26	27	28	29	31	32	33	35	36	38	39	41	42	44	46	47	49	51	52	
32	19	20	21	22	23	25	26	27	28	30	31	32	34	35	36	38	39	41	42	44	45	47	49	50	
33	18	19	20	22	23	24	25	26	27	28	30	31	32	34	35	36	38	39	41	42	44	45	47	48	
34	18	19	20	21	22	23	24	25	26	27	29	30	31	32	34	35	36	38	39	41	42	44	45	47	
35	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	34	35	36	38	39	40	42	43	45	
36	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	34	35	36	38	39	40	42	43	
37	16	17	18	19	19	20	21	22	23	25	26	27	28	29	30	31	33	34	35	36	38	39	40	42	
38	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	36	38	39	40	
39	15	16	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	36	38	39	
40	14	15	16	17	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	36	37	140°
42	13	14	15	16	16	17	18	19	20	21	21	22	23	24	25	26	27	28	29	30	31	33	34	35	138
44	12	13	14	14	15	16	17	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	33	136
46	12	12	13	13	14	15	16	16	17	18	19	19	20	21	22	23	24	25	26	26	27	28	29	30	134
48	11	11	12	13	13	14	15	15	16	17	17	18	19	20	20	21	22	23	24	25	26	26	27	28	132
50	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	21	21	22	23	24	25	25	26	130
52	9	10	10	11	11	12	13	13	14	14	15	16	16	17	18	18	19	20	21	21	22	23	24	25	128
54	9	9	10	10	11	11	12	12	13	13	14	15	15	16	16	17	18	18	19	20	21	21	22	23	126
56	8	9	9	9	10	10	11	11	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	124
58	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	18	18	19	20	122
60	7	7	8	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	18	18	120
62	6	7	7	7	8	8	9	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	118
64	6	6	6	7	7	8	8	8	9	9	9	10	10	11	11	12	12	12	13	13	14	14	15	15	116
66	5	6	6	6	7	7	7	8	8	8	9	9	9	10	10	11	11	11	12	12	13	13	14	14	114
68	5	5	5	6	6	6	7	7	7	7	8	8	8	9	9	10	10	10	11	11	11	12	12	13	112
70	4	5	5	5	5	6	6	6	6	7	7	7	8	8	8	9	9	9	10	10	10	11	11	11	110
74	3	4	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	106
78	3	3	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	5	6	6	6	6	6	7	102
82	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	98
86	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	94
90°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90°
Apparent Distance.	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	60′	Apparent Distance.
	FIRST CORRECTION OF DISTANCE.																								

TABLE VII.

For finding the Correction of the Lunar Distance for the Contraction of the Moon's Semidiameter.

TABLE VII. A. GIVING THE ARGUMENT FOR TABLE VII. B.

Reduced P.and R. of ☽.	APPARENT ALTITUDE OF ☽.																							
	5°	5½°	6°	6½°	7°	7½°	8°	8½°	9°	9½°	10°	11°	12°	13°	14°	15°	16°	17°	18°	20°	25°	30°	40°	50°
41′	65	56																						
42	63	54	47	41																				
43	62	53	46	40	35																			
44	60	51	45	39	34	30	27																	
45	58	50	43	38	33	30	26	24	21	20														
46	57	49	42	37	33	29	26	23	21	19	17	15												
47	56	48	41	36	32	28	25	23	20	19	17	14	12	10										
48	54	46	40	35	31	28	25	22	20	18	17	14	12	10	9	8	7	6						
49	53	45	39	35	30	27	24	22	19	18	16	14	12	10	9	8	7	6	6	5	3			
50	52	44	38	34	30	26	24	21	19	17	16	13	11	10	9	8	7	6	5	5	3	3	2	
51	50	43	38	33	29	26	23	21	19	17	15	13	11	10	8	7	7	6	5	5	3	2	2	2
52	49	42	37	32	28	25	23	20	18	17	15	13	11	9	8	7	7	6	5	4	3	2	2	2
53	48	41	36	32	28	25	22	20	18	16	15	12	11	9	8	7	6	6	5	4	3	2	2	2
54	47	41	35	31	27	24	22	19	18	16	15	12	10	9	8	7	6	6	5	4	3	2	2	2
55			35	30	27	24	21	19	17	16	14	12	10	9	8	7	6	6	5	4	3	2	2	2
56					26	23	21	19	17	15	14	12	10	9	8	7	6	5	5	4	3	2	2	2
57								18	17	15	14	12	10	9	7	7	6	5	5	4	3	2	2	2
58											13	11	10	8	7	7	6	5	5	4	3	2	2	2
59														8	7	6	6	5	5	4	3	2	2	2
60																				4	3	2	2	2

TABLE VII. B. CONTRACTION OF ☽'S SEMIDIAMETER.

Whole Correction of ☽.	ARGUMENT = NUMBER FROM TABLE VII. A.																								
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	44	48	52	56	60	64
′	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3
20	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5
22	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	4	4	4	5	5	5	6	6
24	0	0	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	6	6	6	7	7
26	0	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5	6	6	7	8	8	9
28	0	1	1	1	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6	6	7	8	8	9	9	10
30	0	1	1	1	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	8	9	9	10	11	12
32	0	1	1	2	2	2	3	3	4	4	5	5	5	6	6	7	7	7	8	8	9	10	11	11	12	13
34	0	1	1	2	2	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	11	12	13	14	15
36	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	13	15	16	17
38	1	1	2	2	3	3	4	5	5	6	6	7	8	8	9	9	10	10	11	12	13	14	15	16	17	18
40	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	12	12	13	14	15	17	18	19	20
42	1	1	2	3	4	4	5	6	6	7	8	8	9	10	11	11	12	13	13	14	16	17	18	20	21	23
44	1	2	2	3	4	5	5	6	7	8	9	9	10	11	12	12	13	14	15	15	17	19	20	22	23	
45	1	2	2	3	4	5	6	6	7	8	9	10	11	11	12	13	14	15	15	16	18	19	21	23	24	
46	1	2	3	3	4	5	6	7	7	8	9	10	11	12	13	14	14	15	16	17	19	20	22	24		
47	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	14	15	16	17	18	19	21	23	25		
48	1	2	3	4	5	6	6	7	8	9	10	11	12	13	14	15	16	17	18	18	20	22	24	26		
49	1	2	3	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	21	23	25			
50	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26			
51	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	23	25	27			
52	1	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	21	22	24	26				
53	1	2	3	4	6	7	8	9	10	11	12	13	15	16	17	18	19	20	21	22	25	27				
54		2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	26					
55		2	4	5	6	7	8	10	11	12	13	15	16	17	18	19	21	22								
56		3	4	5	6	8	9	10	11	13	14	15	16													
57			4	5	7																					

When the *nearest* limb is observed ***subtract*** this correction: when the ***farthest, add.***

TABLE VIII.

For finding the Correction of the Lunar Distance for the Contraction of the Sun's Semidiameter.

TABLE VIII. A. GIVING THE ARGUMENT FOR TABLE VIII. B.

Reduced P. and R. of ⊙.	APPARENT ALTITUDE OF ⊙.																							
	5°	5½°	6°	6½°	7°	7½°	8°	8½°	9°	9½°	10°	11°	12°	13°	14°	15°	16°	17°	18°	20°	25°	30°	40°	50°
1′ 0″																							22	18
30																					30	34	24	29
2 0																			35	37	42	46	46	
30																	40	42	44	47	53	59		
3 0															44	46	49	51	53	57				
30													45	48	51	54	57	60	62	67				
4 0											45	49	52	55	59	62	65	68						
30									47	49	51	55	59	63	66	70								
5 0							47	50	52	54	57	61	66	70	74									
30					47	50	52	55	57	60	62	67	72											
6 0				49	52	55	57	60	63	66	68	74												
30			50	53	56	59	62	65	68	71	74													
7 0		51	54	58	61	64	67	70	74															
30		55	58	62	65	69	72	75																
8 0	55	59	62	66	70	73	77																	
30	59	63	66	70	74	78																		
9 0	62	66	70	74	79																			
30	66	70	74	79																				
10 0	69	74	78																					
30	73	77																						
11 0	76	81																						
30	80																							

TABLE VIII. B. CONTRACTION OF ⊙'S SEMIDIAMETER.

Whole Correction of ⊙.	ARGUMENT = NUMBER FROM TABLE VIII. A.																							
	20	24	28	32	36	40	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78
′ ″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 0			2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30					3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
3 0						4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
30							5	5	5	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3
4 0							7	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4
20								7	7	7	7	6	6	6	6	5	5	5	5	5	5	5	4	4
40								9	8	8	8	7	7	7	7	6	6	6	6	6	5	5	5	5
5 0								10	9	9	9	8	8	8	8	7	7	7	7	6	6	6	6	6
20									11	10	10	9	9	9	9	8	8	8	8	7	7	7	7	7
40									12	12	11	11	10	10	10	9	9	9	9	8	8	8	8	7
6 0										13	12	12	12	11	11	10	10	10	10	9	9	9	9	8
20										14	14	13	13	12	12	12	11	11	11	10	10	10	10	9
40										16	15	15	14	14	13	13	13	12	12	11	11	11	11	10
7 0										18	17	16	16	15	15	14	14	13	13	13	12	12	12	11
20											19	18	17	17	16	16	15	15	14	14	13	13	13	12
40												20	19	18	18	17	17	16	16	15	15	14	14	14
8 0												21	21	20	19	19	18	17	17	16	16	16	15	15
20														22	21	20	20	19	18	18	17	17	16	16
40														23	23	22	21	20	20	19	19	18	18	17
9 0																24	23	22	21	21	20	20	19	19
20																	25	24	23	22	22	21	21	20
40																		25	25	24	23	23	22	22
10 0																			26	26	25	24	24	23
20																				28	27	26	25	25
40																					28	28	27	26
11 0																							29	28
20																								30

Subtract this correction from the distance.

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 0h.	′ 0m.	″ 0s.		0.0000	0.3010	0.4771	0.6021	0.6990	0.7782	0 8451	0.9031	0.9542
	0	10	1.0000	1.0414	1.0792	1.1139	1.1461	1.1761	1.2041	1.2304	1.2553	1.2788
	0	20	1.3010	1.3222	1.3424	1.3617	1.3802	1.3979	1.4150	1.4314	1.4472	1.4624
	0	30	1.4771	1.4914	1.5051	1.5185	1.5315	1.5441	1.5563	1.5682	1.5798	1.5911
	0	40	1.6021	1.6128	1.6232	1.6335	1.6435	1.6532	1.6628	1.6721	1.6812	1.6902
	0	50	1.6990	1.7076	1.7160	1.7243	1.7324	1.7404	1.7482	1.7559	1.7634	1.7709
0	1	0	1.7782	1.7853	1.7924	1.7993	1.8062	1.8129	1.8195	1.8261	1.8325	1.8388
	1	10	1.8451	1.8513	1.8573	1.8633	1.8692	1.8751	1.8808	1.8865	1.8921	1.8976
	1	20	1.9031	1.9085	1.9138	1.9191	1.9243	1.9294	1.9345	1.9395	1.9445	1.9494
	1	30	1.9542	1.9589	1.9638	1.9685	1.9731	1.9777	1.9823	1.9868	1.9912	1.9956
	1	40	2.0000	2.0043	2.0086	2.0128	2.0170	2.0212	2.0253	2.0294	2.0334	2.0374
	1	50	2.0414	2.0453	2.0492	2.0531	2.0569	2.0607	2.0645	2.0682	2.0719	2.0755
0	2	0	2.0792	2.0828	2.0864	2.0899	2.0934	2.0969	2.1004	2.1038	2.1072	2.1106
	2	10	2.1139	2.1173	2.1206	2.1239	2.1271	2.1303	2.1335	2.1367	2.1399	2.1430
	2	20	2.1461	2.1492	2.1523	2.1553	2.1584	2.1614	2.1644	2.1673	2.1703	2.1732
	2	30	2.1761	2.1790	2.1818	2.1847	2.1875	2.1903	2.1931	2.1959	2.1987	2.2014
	2	40	2.2041	2.2068	2.2095	2.2122	2.2148	2.2175	2.2201	2.2227	2.2253	2.2279
	2	50	2.2304	2.2330	2.2355	2.2380	2.2405	2.2430	2.2455	2.2480	2.2504	2.2529
0	3	0	2.2553	2.2577	2.2601	2.2625	2.2648	2.2672	2.2695	2.2718	2.2742	2.2765
	3	10	2.2788	2.2810	2.2833	2.2856	2.2878	2.2900	2.2923	2.2945	2.2967	2.2989
	3	20	2.3010	2.3032	2.3054	2.3075	2.3096	2.3118	2.3139	2.3160	2.3181	2.3201
	3	30	2.3222	2.3243	2.3263	2.3284	2.3304	2.3324	2.3345	2.3365	2.3385	2.3404
	3	40	2.3424	2.3444	2.3464	2.3483	2.3502	2.3522	2.3541	2.3560	2.3579	2.3598
	3	50	2 3617	2.3636	2.3655	2.3674	2.3692	2.3711	2.3729	2.3747	2.3766	2.3784
0	4	0	2.3802	2.3820	2.3838	2.3856	2.3874	2.3892	2.3909	2.3927	2.3945	2.3962
	4	10	2.3979	2.3997	2.4014	2.4031	2.4048	2.4065	2.4082	2.4099	2.4116	2.4133
	4	20	2.4150	2.4166	2.4183	2.4200	2.4216	2.4232	2.4249	2.4265	2.4281	2.4298
	4	30	2.4314	2.4330	2.4346	2.4362	2.4378	2.4393	2.4409	2.4425	2.4440	2.4456
	4	40	2.4472	2.4487	2.4502	2.4518	2.4533	2.4548	2.4564	2.4579	2.4594	2.4609
	4	50	2.4624	2.4639	2.4654	2.4669	2.4683	2.4698	2.4713	2.4728	2.4742	2.4757
0	5	0	2.4771	2.4786	2.4800	2.4814	2.4829	2.4843	2.4857	2.4871	2.4886	2.4900
	5	10	2.4914	2.4928	2.4942	2.4955	2.4969	2.4983	2.4997	2.5011	2.5024	2.5038
	5	20	2.5051	2.5065	2.5079	2.5092	2.5105	2.5119	2.5132	2.5145	2.5159	2.5172
	5	30	2.5185	2.5198	2.5211	2.5224	2.5237	2.5250	2.5263	2.5276	2.5289	2.5302
	5	40	2.5315	2.5328	2.5340	2.5353	2.5366	2.5378	2.5391	2 5403	2.5416	2.5428
	5	50	2.5441	2.5453	2.5465	2.5478	2.5490	2.5502	2.5514	2.5527	2.5539	2.5551
0	6	0	2.5563	2.5575	2.5587	2.5599	2.5611	2.5623	2.5635	2.5647	2.5658	2.5670
	6	10	2.5682	2.5694	2.5705	2.5717	2.5729	2.5740	2.5752	2.5763	2.5775	2.5786
	6	20	2.5798	2.5809	2.5821	2.5832	2.5843	2.5855	2.5866	2.5877	2.5888	2.5899
	6	30	2.5911	2.5922	2.5933	2.5944	2.5955	2.5966	2.5977	2.5988	2.5999	2.6010
	6	40	2.6021	2.6031	2.6042	2.6053	2.6064	2.6075	2.6085	2.6096	2.6107	2.6117
	6	50	2.6128	2.6138	2.6149	2.6160	2.6170	2.6180	2.6191	2.6201	2.6212	2.6222
0	7	0	2.6232	2.6243	2.6253	2.6263	2.6274	2.6284	2.6294	2.6304	2.6314	2.6325
	7	10	2.6335	2.6345	2.6355	2.6365	2.6375	2.6385	2.6395	2.6405	2.6415	2.6425
	7	20	2.6435	2.6444	2.6454	2.6464	2.6474	2.6484	2.6493	2.6503	2.6513	2.6522
	7	30	2.6532	2.6542	2.6551	2.6561	2.6571	2.6580	2.6590	2.6599	2.6609	2.6618
	7	40	2.6628	2.6637	2.6646	2.6656	2.6665	2.6675	2.6684	2.6693	2.6702	2.6712
	7	50	2.6721	2.6730	2.6739	2.6749	2.6758	2.6767	2.6776	2.6785	2.6794	2.6803
0	8	0	2.6812	2.6821	2.6830	2.6839	2.6848	2.6857	2.6866	2.6875	2.6884	2.6893
	8	10	2.6902	2.6911	2.6920	2.6928	2.6937	2.6946	2.6955	2.6964	2.6972	2.6981
	8	20	2.6990	2.6998	2.7007	2.7016	2.7024	2.7033	2.7042	2.7050	2.7059	2.7067
	8	30	2.7076	2.7084	2.7093	2.7101	2.7110	2.7118	2.7126	2.7135	2.7143	2.7152
	8	40	2.7160	2.7168	2.7177	2.7185	2.7193	2.7202	2.7210	2.7218	2.7226	2.7235
	8	50	2.7243	2.7251	2.7259	2.7267	2.7275	2.7284	2.7292	2.7300	2.7308	2.7316
0	9	0	2.7324	2.7332	2.7340	2.7348	2.7356	2.7364	2.7372	2.7380	2.7388	2.7396
	9	10	2.7404	2.7412	2.7419	2.7427	2.7435	2.7443	2.7451	2.7459	2.7466	2.7474
	9	20	2.7482	2.7490	2.7497	2.7505	2.7513	2.7520	2.7528	2.7536	2.7543	2.7551
	9	30	2.7559	2.7566	2.7574	2.7582	2.7589	2.7597	2.7604	2.7612	2.7619	2.7627
	9	40	2.7634	2.7642	2.7649	2.7657	2.7664	2.7672	2.7679	2.7686	2.7694	2.7701
	9	50	2.7709	2.7716	2.7723	2.7731	2.7738	2.7745	2.7752	2.7760	2.7767	2.7774

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{0}{}^{h.}\,\overset{\prime}{10}{}^{m.}\,\overset{\prime\prime}{0}{}^{s.}$	2.7782	2.7789	2.7796	2.7803	2.7810	2.7818	2.7825	2.7832	2.7839	2.7846
10 10	2.7853	2.7860	2.7868	2.7875	2.7882	2.7889	2.7896	2.7903	2.7910	2.7917
10 20	2.7924	2.7931	2.7938	2.7945	2.7952	2.7959	2.7966	2.7973	2.7980	2.7987
10 30	2.7993	2.8000	2.8007	2.8014	2.8021	2.8028	2.8035	2.8041	2.8048	2.8055
10 40	2.8062	2.8069	2.8075	2.8082	2.8089	2.8096	2.8102	2.8109	2.8116	2.8122
10 50	2.8129	2.8136	2.8142	2.8149	2.8156	2.8162	2.8169	2.8176	2.8182	2.8189
0 11 0	2.8195	2.8202	2.8209	2.8215	2.8222	2.8228	2.8235	2.8241	2.8248	2.8254
11 10	2.8261	2.8267	2.8274	2.8280	2.8287	2.8293	2.8299	2.8306	2.8312	2.8319
11 20	2.8325	2.8331	2.8338	2.8344	2.8351	2.8357	2.8363	2.8370	2.8376	2.8382
11 30	2.8388	2.8395	2.8401	2.8407	2.8414	2.8420	2.8426	2.8432	2.8439	2.8445
11 40	2.8451	2.8457	2.8463	2.8470	2.8476	2.8482	2.8488	2.8494	2.8500	2.8506
11 50	2.8513	2.8519	2.8525	2.8531	2.8537	2.8543	2.8549	2.8555	2.8561	2.8567
0 12 0	2.8573	2.8579	2.8585	2.8591	2.8597	2.8603	2.8609	2.8615	2.8621	2.8627
12 10	2.8633	2.8639	2.8645	2.8651	2.8657	2.8663	2.8669	2.8675	2.8681	2.8686
12 20	2.8692	2.8698	2.8704	2.8710	2.8716	2.8722	2.8727	2.8733	2.8739	2.8745
12 30	2.8751	2.8756	2.8762	2.8768	2.8774	2.8779	2.8785	2.8791	2.8797	2.8802
12 40	2.8808	2.8814	2.8820	2.8825	2.8831	2.8837	2.8842	2.8848	2.8854	2.8859
12 50	2.8865	2.8871	2.8876	2.8882	2.8887	2.8893	2.8899	2.8904	2.8910	2.8915
0 13 0	2.8921	2.8927	2.8932	2.8938	2.8943	2.8949	2.8954	2.8960	2.8965	2.8971
13 10	2.8976	2.8982	2.8987	2.8993	2.8998	2.9004	2.9009	2.9015	2.9020	2.9025
13 20	2.9031	2.9036	2.9042	2.9047	2.9053	2.9058	2.9063	2.9069	2.9074	2.9079
13 30	2.9085	2.9090	2.9096	2.9101	2.9106	2.9112	2.9117	2.9122	2.9128	2.9133
13 40	2.9138	2.9143	2.9149	2.9154	2.9159	2.9165	2.9170	2.9175	2.9180	2.9186
13 50	2.9191	2.9196	2.9201	2.9206	2.9212	2.9217	2.9222	2.9227	2.9232	2.9238
0 14 0	2.9243	2.9248	2.9253	2.9258	2.9263	2.9269	2.9274	2.9279	2.9284	2.9289
14 10	2.9294	2.9299	2.9304	2.9309	2.9315	2.9320	2.9325	2.9330	2.9335	2.9340
14 20	2.9345	2.9350	2.9355	2.9360	2.9365	2.9370	2.9375	2.9380	2.9385	2.9390
14 30	2.9395	2.9400	2.9405	2.9410	2.9415	2.9420	2.9425	2.9430	2.9435	2.9440
14 40	2.9445	2.9450	2.9455	2.9460	2.9465	2.9469	2.9474	2.9479	2.9484	2.9489
14 50	2.9494	2.9499	2.9504	2.9509	2.9513	2.9518	2.9523	2.9528	2.9533	2.9538
0 15 0	2.9542	2.9547	2.9552	2.9557	2.9562	2.9566	2.9571	2.9576	2.9581	2.9586
15 10	2.9590	2.9595	2.9600	2.9605	2.9609	2.9614	2.9619	2.9624	2.9628	2.9633
15 20	2.9638	2.9643	2.9647	2.9652	2.9657	2.9661	2.9666	2.9671	2.9675	2.9680
15 30	2.9685	2.9689	2.9694	2.9699	2.9703	2.9708	2.9713	2.9717	2.9722	2.9727
15 40	2.9731	2.9736	2.9741	2.9745	2.9750	2.9754	2.9759	2.9763	2.9768	2.9773
15 50	2.9777	2.9782	2.9786	2.9791	2.9795	2.9800	2.9805	2.9809	2.9814	2.9818
0 16 0	2.9823	2.9827	2.9832	2.9836	2.9841	2.9845	2.9850	2.9854	2.9859	2.9863
16 10	2.9868	2.9872	2.9877	2.9881	2.9886	2.9890	2.9894	2.9899	2.9903	2.9908
16 20	2.9912	2.9917	2.9921	2.9926	2.9930	2.9934	2.9939	2.9943	2.9948	2.9952
16 30	2.9956	2.9961	2.9965	2.9969	2.9974	2.9978	2.9983	2.9987	2.9991	2.9996
16 40	3.0000	3.0004	3.0009	3.0013	3.0017	3.0022	3.0026	3.0030	3.0035	3.0039
16 50	3.0043	3.0048	3.0052	3.0056	3.0060	3.0065	3.0069	3.0073	3.0077	3.0082
0 17 0	3.0086	3.0090	3.0095	3.0099	3.0103	3.0107	3.0111	3.0116	3.0120	3.0124
17 10	3.0128	3.0133	3.0137	3.0141	3.0145	3.0149	3.0154	3.0158	3.0162	3.0166
17 20	3.0170	3.0175	3.0179	3.0183	3.0187	3.0191	3.0195	3.0199	3.0204	2.0208
17 30	3.0212	3.0216	3.0220	3.0224	3.0228	3.0233	3.0237	3.0241	3.0245	3.0249
17 40	3.0253	3.0257	3.0261	3.0265	3.0269	3.0273	3.0278	3.0282	3.0286	3.0290
17 50	3.0294	3.0298	3.0302	3.0306	3.0310	3.0314	3.0318	3.0322	3.0326	3.0330
0 18 0	3.0334	3.0338	3.0342	3.0346	3.0350	3.0354	3.0358	3.0362	3.0366	3.0370
18 10	3.0374	3.0378	3.0382	3.0386	3.0390	3.0394	3 0398	3.0402	3.0406	3.0410
18 20	3.0414	3.0418	3.0422	3.0426	3.0430	3.0434	3.0438	3.0441	3.0445	3.0449
18 30	3.0453	3.0457	3.0461	3.0465	3.0469	3.0473	3.0477	3.0481	3.0484	3.0488
18 40	3.0492	3.0496	3.0500	3.0504	3.0508	3.0512	3.0515	3.0519	3.0523	3.0527
18 50	3.0531	3.0535	3.0538	3.0542	3.0546	3.0550	3.0554	3 0558	3.0561	3.0565
0 19 0	3.0569	3.0573	3.0577	3.0580	3.0584	3.0588	3.0592	3.0596	3.0599	3.0603
19 10	3.0607	3.0611	3.0615	3.0618	3.0622	3.0626	3.0630	3.0633	3.0637	3.0641
19 20	3.0645	3.0648	3.0652	3.0656	3.0660	3.0663	3.0667	3.0671	3.0674	3.0678
19 30	3.0682	3.0686	3.0689	3.0693	3.0697	3.0700	3.0704	3.0708	3.0711	3.0715
19 40	3.0719	3.0722	3.0726	3.0730	3.0734	3.0737	3.0741	3.0745	3.0748	3.0752
19 50	3.0755	3.0759	3.0763	3.0766	3.0770	3.0774	3.0777	3.0781	3.0785	3.0788

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{0}{}^{h}\cdot\overset{\prime}{20}{}^{m}\cdot\overset{\prime\prime}{0}{}^{s}$	3.0792	3.0795	3.0799	3.0803	3.0806	3.0810	3.0813	3.0817	3.0821	3.0824
20 10	3.0828	3.0831	3.0835	3.0839	3.0842	3.0846	3.0849	3.0853	3.0856	3.0860
20 20	3.0864	3.0867	3.0871	3.0874	3.0878	3.0881	3.0885	3.0888	3.0892	3.0896
20 30	3.0899	3.0903	3.0906	3.0910	3.0913	3.0917	3.0920	3.0924	3.0927	3.0931
20 40	3.0934	3.0938	3.0941	3.0945	3.0948	3.0952	3.0955	3.0959	3.0962	3.0966
20 50	3.0969	3.0973	3.0976	3.0980	3.0983	3.0986	3.0990	3.0993	3.0997	3.1000
0 21 0	3.1004	3.1007	3.1011	3.1014	3.1017	3.1021	3.1024	3.1028	3.1031	3.1035
21 10	3.1038	3.1041	3.1045	3.1048	3.1052	3.1055	3.1059	3.1062	3.1065	3.1069
21 20	3.1072	3.1075	3.1079	3.1082	3.1086	3.1089	3.1092	3.1096	3.1099	3.1103
21 30	3.1106	3.1109	3.1113	3.1116	3.1119	3.1123	3.1126	3.1129	3.1133	3.1136
21 40	3.1139	3.1143	3.1146	3.1149	3.1153	3.1156	3.1159	3.1163	3.1166	3.1169
21 50	3.1173	3.1176	3.1179	3.1183	3.1186	3.1189	3.1193	3.1196	3.1199	3.1202
0 22 0	3.1206	3.1209	3.1212	3.1216	3.1219	3.1222	3.1225	3.1229	3.1232	3.1235
22 10	3.1239	3.1242	3.1245	3.1248	3.1252	3.1255	3.1258	3.1261	3.1265	3.1268
22 20	3.1271	3.1274	3.1278	3.1281	3.1284	3.1287	3.1290	3.1294	3.1297	3.1300
22 30	3.1303	3.1307	3.1310	3.1313	3.1316	3.1319	3.1323	3.1326	3.1329	3.1332
22 40	3.1335	3.1339	3.1342	3.1345	3.1348	3.1351	3.1355	3.1358	3.1361	3.1364
22 50	3.1367	3.1370	3.1374	3.1377	3.1380	3.1383	3.1386	3.1389	3.1392	3.1396
0 23 0	3.1399	3.1402	3.1405	3.1408	3.1411	3.1414	3.1418	3.1421	3.1424	3.1427
23 10	3.1430	3.1433	3.1436	3.1440	3.1443	3.1446	3.1449	3.1452	3.1455	3.1458
23 20	3.1461	3.1464	3.1467	3.1471	3.1474	3.1477	3.1480	3.1483	3.1486	3.1489
23 30	3.1492	3.1495	3.1498	3.1501	3.1504	3.1508	3.1511	3.1514	3.1517	3.1520
23 40	3.1523	3.1526	3.1529	3.1532	3.1535	3.1538	3.1541	3.1544	3.1547	3.1550
23 50	3.1553	3.1556	3.1559	3.1562	3.1565	3.1569	3.1572	3.1575	3.1578	3.1581
0 24 0	3.1584	3.1587	3.1590	3.1593	3.1596	3.1599	3.1602	3.1605	3.1608	3.1611
24 10	3.1614	3.1617	3.1620	3.1623	3.1626	3.1629	3.1632	3.1635	3.1638	3.1641
24 20	3.1644	3.1647	3.1649	3.1652	3.1655	3.1658	3.1661	3.1664	3.1667	3.1670
24 30	3.1673	3.1676	3.1679	3.1682	3.1685	3.1688	3.1691	3.1694	3.1697	3.1700
24 40	3.1703	3.1706	3.1708	3.1711	3.1714	3.1717	3.1720	3.1723	3.1726	3.1729
24 50	3.1732	3.1735	3.1738	3.1741	3.1744	3.1746	3.1749	3.1752	3.1755	3.1758
0 25 0	3.1761	3.1764	3.1767	3.1770	3.1772	3.1775	3.1778	3.1781	3.1784	3.1787
25 10	3.1790	3.1793	3.1796	3.1798	3.1801	3.1804	3.1807	3.1810	3.1813	3.1816
25 20	3.1818	3.1821	3.1824	3.1827	3.1830	3.1833	3.1836	3.1838	3.1841	3.1844
25 30	3.1847	3.1850	3.1853	3.1855	3.1858	3.1861	3.1864	3.1867	3.1870	3.1872
25 40	3.1875	3.1878	3.1881	3.1884	3.1886	3.1889	3.1892	3.1895	3.1898	3.1901
25 50	3.1903	3.1906	3.1909	3.1912	3.1915	3.1917	3.1920	3.1923	3.1926	3.1928
0 26 0	3.1931	3.1934	3.1937	3.1940	3.1942	3.1945	3.1948	3.1951	3.1953	3.1956
26 10	3.1959	3.1962	3.1965	3.1967	3.1970	3.1973	3.1976	3.1978	3.1981	3.1984
26 20	3.1987	3.1989	3.1992	3.1995	3.1998	3.2000	3.2003	3.2006	3.2009	3.2011
26 30	3.2014	3.2017	3.2019	3.2022	3.2025	3.2028	3.2030	3.2033	3.2036	3.2038
26 40	3.2041	3.2044	3.2047	3.2049	3.2052	3.2055	3.2057	3.2060	3.2063	3.2066
26 50	3.2068	3.2071	3.2074	3.2076	3.2079	3.2082	3.2084	3.2087	3.2090	3.2092
0 27 0	3.2095	3.2098	3.2101	3.2103	3.2106	3.2109	3.2111	3.2114	3.2117	3.2119
27 10	3.2122	3.2125	3.2127	3.2130	3.2133	3.2135	3.2138	3.2140	3.2143	3.2146
27 20	3.2148	3.2151	3.2154	3.2156	3.2159	3.2162	3.2164	3.2167	3.2170	3.2172
27 30	3.2175	3.2177	3.2180	3.2183	3.2185	3.2188	3.2191	3.2193	3.2196	3.2198
27 40	3.2201	3.2204	3.2206	3.2209	3.2212	3.2214	3.2217	3.2219	3.2222	3.2225
27 50	3.2227	3.2230	3.2232	3.2235	3.2238	3.2240	3.2243	3.2245	3.2248	3.2250
0 28 0	3.2253	3.2256	3.2258	3.2261	3.2263	3.2266	3.2269	3.2271	3.2274	3.2276
28 10	3.2279	3.2281	3.2284	3.2287	3.2289	3.2292	3.2294	3.2297	3.2299	3.2302
28 20	3.2304	3.2307	3.2310	3.2312	3.2315	3.2317	3.2320	3.2322	3.2325	3.2327
28 30	3.2330	3.2333	3.2335	3.2338	3.2340	3.2343	3.2345	3.2348	3.2350	3.2353
28 40	3.2355	3.2358	3.2360	3.2363	3.2365	3.2368	3.2370	3.2373	3.2375	3.2378
28 50	3.2380	3.2383	3.2385	3.2388	3.2390	3.2393	3.2395	3.2398	3.2400	3.2403
0 29 0	3.2405	3.2408	3.2410	3.2413	3.2415	3.2418	3.2420	3.2423	3.2425	3.2428
29 10	3.2430	3.2433	3.2435	3.2438	3.2440	3.2443	3.2445	3.2448	3.2450	3.2453
29 20	3.2455	3.2458	3.2460	3.2463	3.2465	3.2467	3.2470	3.2472	3.2475	3.2477
29 30	3.2480	3.2482	3.2485	3.2487	3.2490	3.2492	3.2494	3.2497	3.2499	3.2502
29 40	3.2504	3.2507	3.2509	3.2512	3.2514	3.2516	3.2519	3.2521	3.2524	3.2526
29 50	3.2529	3.2531	3.2533	3.2536	3.2538	3.2541	3.2543	3.2545	3.2548	3.2550

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{0}{}^{h}\cdot\overset{\prime}{30}{}^{m}\cdot\ \overset{\prime\prime}{0}{}^{s}$	3.2553	3.2555	3.2558	3.2560	3.2562	3.2565	3.2567	3.2570	3.2572	3.2574
30 10	3.2577	3.2579	3.2582	3.2584	3.2586	3.2589	3.2591	3.2594	3.2596	3.2598
30 20	3.2601	3.2603	3.2605	3.2608	3.2610	3.2613	3.2615	3.2617	3.2620	3.2622
30 30	3.2625	3.2627	3.2629	3.2632	3.2634	3.2636	3.2639	3.2641	3.2643	3.2646
30 40	3.2648	3.2651	3.2653	3.2655	3.2658	3.2660	3.2662	3.2665	3.2667	3.2669
30 50	3.2672	3.2674	3.2676	3.2679	3.2681	3.2683	3.2686	3.2688	3.2690	3.2693
0 31 0	3.2695	3.2697	3.2700	3.2702	3.2704	3.2707	3.2709	3.2711	3.2714	3.2716
31 10	3.2718	3.2721	3.2723	3.2725	3.2728	3.2730	3.2732	3.2735	3.2737	3.2739
31 20	3.2742	3.2744	3.2746	3.2749	3.2751	3.2753	3.9755	3.2758	3.2760	3.2762
31 30	3.2765	3.2767	3.2769	3.2772	3.2774	3.2776	3.2778	3.2781	3.2783	3.2785
31 40	3.2788	3.2790	3.2792	3.2794	3.2797	3.2799	3.2801	3.2804	3.2806	3.2808
31 50	3.2810	3.2813	3.2815	3.2817	3.2819	3.2822	3.2824	3.2826	3.2828	3.2831
0 32 0	3.2833	3.2835	3.2838	3.2840	3.2842	3.2844	3.2847	3.2849	3.2851	3.2853
32 10	3.2856	3.2858	3.2860	3.2862	3.2865	3.2867	3.2869	3.2871	3.2874	3.2876
32 20	3.2878	3.2880	3.2882	3.2885	3.2887	3.2889	3.2891	3.2894	3.2896	3.2898
32 30	3.2900	3.2903	3.2905	3.2907	3.2909	3.2911	3.2914	3.2916	3.2918	3.2920
32 40	3.2923	3.2925	3.2927	3.2929	3.2931	3.2934	3.2936	3.2938	3.2940	3.2942
32 50	3.2945	3.2947	3.2949	3.2951	3.2953	3.2956	3.2958	3.2960	3.2962	3.2964
0 33 0	3.2967	3.2969	3.2971	3.2973	3.2975	3.2978	3.2980	3.2982	3.2984	3.2986
33 10	3.2989	3.2991	3.2993	3.2995	3.2997	3.2999	3.3002	3.3004	3.3006	3.3008
33 20	3.3010	3.3012	3.3015	3.3017	3.3019	3.3021	3.3023	3.3025	3.3028	3.3030
33 30	3.3032	3.3034	3.3036	3.3038	3.3041	3.3043	3.3045	3.3047	3.3049	3.3051
33 40	3.3054	3.3056	3.3058	3.3060	3.3062	3.3064	3.3066	3.3069	3.3071	3.3073
33 50	3.3075	3.3077	3.3079	3.3081	3.3084	3.3086	3.3088	3.3090	3.3092	3.3094
0 34 0	3.3096	3.3098	3.3101	3.3103	3.3105	3.3107	3.3109	3.3111	3.3113	3.3115
34 10	3.3118	3.3120	3.3122	3.3124	3.3126	3.3128	3.3130	3.3132	3.3134	3.3137
34 20	3.3139	3.3141	3.3143	3.3145	3.3147	3.3149	3.3151	3.3153	3.3156	3.3158
34 30	3.3160	3.3162	3.3164	3.3166	3.3168	3.3170	3.3172	3.3174	3.3176	3.3179
34 40	3.3181	3.3183	3.3185	3.3187	3.3189	3.3191	3.3193	3.3195	3.3197	3.3199
34 50	3.3201	3.3204	3.3206	3.3208	3.3210	3.3212	3.3214	3.3216	3.3218	3.3220
0 35 0	3.3222	3.3224	3.3226	3.3228	3.3230	3.3233	3.3235	3.3237	3.3239	3.3241
35 10	3.3243	3.3245	3.3247	3.3249	3.3251	3.3253	3.3255	3.3257	3.3259	3.3261
35 20	3.3263	3.3265	3.3267	3.3269	3.3272	3.3274	3.3276	3.3278	3.3280	3.3282
35 30	3.3284	3.3286	3.3288	3.3290	3.3292	3.3294	3.3296	3.3298	3.3300	3.3302
35 40	3.3304	3.3306	3.3308	3.3310	3.3312	3.3314	3.3316	3.3318	3.3320	3.3322
35 50	3.3324	3.3326	3.3328	3.3330	3.3332	3.3334	3.3336	3.3339	3.3341	3.3343
0 36 0	3.3345	3.3347	3.3349	3.3351	3.3353	3.3355	3.3357	3.3359	3.3361	3.3363
36 10	3.3365	3.3367	3.3369	3.3371	3.3373	3.3375	3.3377	3.3379	3.3381	3.3383
36 20	3.3385	3.3387	3.3389	3.3391	3.3393	3.3395	3.3397	3.3398	3.3400	3.3402
36 30	3.3404	3.3406	3.3408	3.3410	3.3412	3.3414	3.3416	3.3418	3.3420	3.3422
36 40	3.3424	3.3426	3.3428	3.3430	3.3432	3.3434	3.3436	3.3438	3.3440	3.3442
36 50	3.3444	3.3446	3.3448	3.3450	3.3452	3.3454	3.3456	3.3458	3.3460	3.3462
0 37 0	3.3464	3.3465	3.3467	3.3469	3.3471	3.3473	3.3475	3.3477	3.3479	3.3481
37 10	3.3483	3.3485	3.3487	3.3489	3.3491	3.3493	3.3495	3.3497	3.3499	3.3501
37 20	3.3502	3.3504	3.3506	3.3508	3.3510	3.3512	3.3514	3.3516	3.3518	3.3520
37 30	3.3522	3.3524	3.3526	3.3528	3.3530	3.3531	3.3533	3.3535	3.3537	3.3539
37 40	3.3541	3.3543	3.3545	3.3547	3.3549	3.3551	3.3553	3.3555	3.3556	3.3558
37 50	3.3560	3 3562	3.3564	3.3566	3.3568	3.3570	3.3572	3.3574	3.3576	3.3577
0 38 0	3.3579	3.3581	3.3583	3.3585	3.3587	3.3589	3.3591	3.3593	3.3595	3.3596
38 10	3.3598	3.3600	3.3602	3.3604	3.3606	3.3608	3.3610	3.3612	3.3614	3.3615
38 20	3.3617	3.3619	3.3621	3.3623	3.3625	3.3627	3.3629	3.3630	3.3632	3.3634
38 30	3.3636	3.3638	3.3640	3.3642	3.3644	3.3646	3.3647	3.3649	3.3651	3.3653
38 40	3.3655	3.3657	3.3659	3.3660	3.3662	3.3664	3.3666	3.3668	3.3670	3.3672
38 50	3.3674	3.3675	3.3677	3.3679	3.3681	3.3683	3.3685	3.3687	3.3688	3.3690
0 39 0	3.3692	3.3694	3.3696	3.3698	3.3700	3.3701	3.3703	3.3705	3.3707	3.3709
39 10	3.3711	3.3713	3.3714	3.3716	3.3718	3.3720	3.3722	3.3724	3.3725	3.3727
39 20	3.3729	3.3731	3.3733	3.3735	3.3736	3.3738	3.3740	3.3742	3.3744	3.3746
39 30	3.3747	3.3749	3.3751	3.3753	3.3755	3.3757	3.3758	3.3760	3.3762	3.3764
39 40	3.3766	3.3768	3.3769	3.3771	3.3773	3.3775	3.3777	3.3779	3.3780	3.3782
39 50	3.3784	3.3786	3.3788	3.3789	3.3791	3.3793	3.3795	3.3797	3.3798	3.3800

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{0}{}^{h.}\,\overset{\prime}{40}{}^{m.}\,\overset{\prime\prime}{0}{}^{s.}$	3.3802	3.3804	3.3806	3.3808	3.3809	3.3811	3.3813	3.3815	3.3817	3.3818
40 10	3.3820	3.3822	3.3824	3.3826	3.3827	3.3829	3.3831	3.3833	3.3835	3.3836
40 20	3.3838	3.3840	3.3842	3.3844	3.3845	3.3847	3.3849	3.3851	3.3852	3.3854
40 30	3.3856	3.3858	3.3860	3.3861	3.3863	3.3865	3.3867	3.3869	3.3870	3.3872
40 40	3.3874	3.3876	3.3877	3.3879	3.3881	3.3883	3.3885	3.3886	3.3888	3.3890
40 50	3.3892	3.3893	3.3895	3.3897	3.3899	3.3901	3.3902	3.3904	3.3906	3.3908
0 41 0	3.3909	3.3911	3.3913	3.3915	3.3916	3.3918	3.3920	3.3922	3.3923	3.3925
41 10	3.3927	3.3929	3.3930	3.3932	3.3934	3.3936	3.3938	3.3939	3.3941	3.3943
41 20	3.3945	3.3946	3.3948	3.3950	3.3952	3.3953	3.3955	3.3957	3.3959	3.3960
41 30	3.3962	3.3964	3.3965	3.3967	3.3969	3.3971	3.3972	3.3974	3.3976	3.3978
41 40	3.3979	3.3981	3.3983	3.3985	3.3986	3.3988	3.3990	3.3992	3.3993	3.3995
41 50	3.3997	3.3998	3.4000	3.4002	3.4004	3.4005	3.4007	3.4009	3.4011	3.4012
0 42 0	3.4014	3.4016	3.4017	3.4019	3.4021	3.4023	3.4024	3.4026	3.4028	3.4029
42 10	3.4031	3.4033	3.4035	3.4036	3.4038	3.4040	3.4041	3.4043	3.4045	3.4047
42 20	3.4048	3.4050	3.4052	3.4053	3.4055	3.4057	3.4059	3.4060	3.4062	3.4064
42 30	3.4065	3.4067	3.4069	3.4071	3.4072	3.4074	3.4076	3.4077	3.4079	3.4081
42 40	3.4082	3.4084	3.4086	3.4087	3.4089	3.4091	3.4093	3.4094	3.4096	3.4098
42 50	3.4099	3.4101	3.4103	3.4104	3.4106	3.4108	3.4109	3.4111	3.4113	3.4115
0 43 0	3.4116	3.4118	3.4120	3.4121	3.4123	3.4125	3.4126	3.4128	3.4130	3.4131
43 10	3.4133	3.4135	3.4136	3.4138	3.4140	3.4141	3.4143	3.4145	3.4146	3.4148
43 20	3.4150	3.4151	3.4153	3.4155	3.4156	3.4158	3.4160	3.4161	3.4163	3.4165
43 30	3.4166	3.4168	3.4170	3.4171	3.4173	3.4175	3.4176	3.4178	3.4180	3.4161
43 40	3.4183	3.4185	3.4186	3.4188	3.4190	3.4191	3.4193	3.4195	3.4196	3.4198
43 50	3.4200	3.4201	3.4203	3.4205	3.4206	3.4208	3.4209	3.4211	3.4213	3.4214
0 44 0	3.4216	3.4218	3.4219	3.4221	3.4223	3.4224	3.4226	3.4228	3.4229	3.4231
44 10	3.4232	3.4234	3.4236	3.4237	3.4239	3.4241	3.4242	3.4244	3.4246	3.4247
44 20	3.4249	3.4250	3.4252	3.4254	3.4255	3.4257	3.4259	3.4260	3.4262	3.4263
44 30	3.4265	3.4267	3.4268	3.4270	3.4272	3.4273	3.4275	3.4276	3.4278	3.4280
44 40	3.4281	3.4283	3.4285	3.4286	3.4288	3.4289	3.4291	3.4293	3.4294	3.4296
44 50	3.4298	3.4299	3.4301	3.4302	3.4304	3.4306	3.4307	3.4309	3.4310	3.4312
0 45 0	3.4314	3.4315	3.4317	3.4318	3.4320	3.4322	3.4323	3.4325	3.4326	3.4128
45 10	3.4330	3.4331	3.4333	3.4334	3.4336	3.4338	3.4339	3.4341	3.4342	3.4144
45 20	3.4346	3.4347	3.4349	3.4350	3.4352	3.4354	3.4355	3.4357	3.4358	3.4360
45 30	3.4362	3.4363	3.4365	3.4366	3.4368	3.4370	3.4371	3.4373	3.4374	3.4376
45 40	3.4378	3.4379	3.4381	3.4382	3.4384	3.4385	3.4387	3.4389	3.4390	3.4392
45 50	3.4393	3.4395	3.4396	3.4398	3.4400	3.4401	3.4403	3.4404	3.4406	3.4408
0 46 0	3.4409	3.4411	3.4412	3.4414	3.4415	3.4417	3.4419	3.4420	3.4422	3.4423
46 10	3.4425	3.4426	3.4428	3.4429	3.4431	3.4433	3.4434	3.4436	3.4437	3.4439
46 20	3.4440	3.4442	3.4444	3.4445	3.4447	3.4448	3.4450	3.4451	3.4453	3.4454
46 30	3.4456	3.4458	3.4459	3.4461	3.4462	3.4464	3.4465	3.4467	3.4468	3.4470
46 40	3.4472	3.4473	3.4475	3.4476	3.4478	3.4479	3.4481	3.4482	3.4484	3.4486
46 50	3.4487	3.4489	3.4490	3.4492	3.4493	3.4495	3.4496	3.4498	3.4499	3.4501
0 47 0	3.4502	3.4504	3.4506	3.4507	3.4509	3.4510	3.4512	3.4513	3.4515	3.4516
47 10	3.4518	3.4519	3.4521	3.4522	3.4524	3.4526	3.4527	3.4529	3.4530	3.4532
47 20	3.4533	3.4535	3.4536	3.4538	3.4539	3.4541	3.4542	3.4544	3.4545	3.4547
47 30	3.4548	3.4550	3.4551	3.4553	3.4555	3.4556	3.4558	3.4559	3.4561	3.4562
47 40	3.4564	3.4565	3.4567	3.4568	3.4570	3.4571	3.4573	3.4574	3.4576	3.4577
47 50	3.4579	3.4580	3.4582	3.4583	3.4585	3.4586	3.4588	3.4589	3.4591	3.4592
0 48 0	3.4594	3.4595	3.4597	3.4598	3.4600	3.4601	3.4603	3.4604	3.4606	3.4607
48 10	3.4609	3.4610	3.4612	3.4613	3.4615	3.4616	3.4618	3.4619	3.4621	3.4622
48 20	3.4624	3.4625	3.4627	3.4628	3.4630	3.4631	3.4633	3.4634	3.4636	3.4637
48 30	3.4639	3.4640	3.4642	3.4643	3.4645	3.4646	3.4648	3.4649	3.4651	3.4652
48 40	3.4654	3.4655	3.4657	3.4658	3.4660	3.4661	3.4663	3.4664	3.4666	3.4667
48 50	3.4669	3.4670	3.4672	3.4673	3.4675	3.4676	3.4678	3.4679	3.4681	3.4682
0 49 0	3.4683	3.4685	3.4686	3.4688	3.4689	3.4691	3.4692	3.4694	3.4695	3.4697
49 10	3.4698	3.4700	3.4701	3.4703	3.4704	3.4706	3.4707	3.4709	3.4610	3.4711
49 20	3.4713	3.4714	3.4716	3.4717	3.4719	3.4720	3.4722	3.4723	3.4725	3.4726
49 30	3.4728	3.4729	3.4730	3.4732	3.4733	3.4735	3.4736	3.4738	3,4739	3.4741
49 40	3.4742	3.4744	3.4745	3.4747	3.4748	3.4749	3.4751	3.4752	3.4754	3.4755
49 50	3.4757	3.4758	3.4760	3.4761	3.4763	3.4764	3.4765	3.4767	3.4768	3.4770

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0"	1"	2"	3"	4'	5"	6"	7"	8"	9'
0° 50′ 0″ 0h. 50m. 0s.	3.4771	3.4773	3.4774	3.4776	3.4777	3.4778	3.4780	3.4781	3.4783	3.4784
50 10	3.4786	3.4787	3.4789	3.4790	3.4791	3.4793	3.4794	3.4796	3.4797	3.4799
50 20	3.4800	3.4802	3.4803	3.4804	3.4806	3.4807	3.4809	3.4810	3.4812	3.4813
50 30	3.4814	3.4816	3.4817	3.4819	3.4820	3.4822	3.4823	3.4824	3.4826	3.4827
50 40	3.4829	3.4830	3.4832	3.4833	3.4834	3.4836	3.4837	3.4839	3.4840	3.4842
50 50	3.4843	3.4844	3.4846	3.4847	3.4849	3.4850	3.4852	3.4853	3.4854	3.4856
0 51 0	3.4857	3.4859	3.4860	3.4861	3.4863	3.4864	3.4866	3.4867	3.4869	3.4870
51 10	3.4871	3.4873	3.4874	3.4876	3.4877	3.4878	3.4880	3.4881	3.4883	3.4884
51 20	3.4886	3.4887	3.4888	3.4890	3.4891	3.4893	3.4894	3.4895	3.4897	3.4898
51 30	3.4900	3.4901	3.4902	3.4904	3.4905	3.4907	3.4908	3.4909	3.4911	3.4912
51 40	3.4914	3.4915	3.4916	3.4918	3.4919	3.4921	3.4922	3.4923	3.4925	3.4926
51 50	3.4928	3.4929	3.4930	3.4932	3.4933	3.4935	3.4936	3.4937	3.4939	3.4940
0 52 0	3.4942	3.4943	3.4944	3.4946	3.4947	3.4949	3.4950	3.4951	3.4953	3.4954
52 10	3.4955	3.4957	3.4958	3.4960	3.4961	3.4962	3.4964	3.4965	3.4967	3.4968
52 20	3.4969	3.4971	3.4972	3.4973	3.4975	3.4976	3.4978	3.4979	3.4980	3.4982
52 30	3.4983	3.4984	3.4986	3.4987	3.4989	3.4990	3.4991	3.4993	3.4994	3.4995
52 40	3.4997	3.4998	3.5000	3.5001	3.5002	3.5004	3.5005	3.5006	3.5008	3.5009
52 50	3.5011	3.5012	3.5013	3.5015	3.5016	3.5017	3.5019	3.5020	3.5022	3.5023
0 53 0	3.5024	3.5026	3.5027	3.5028	3.5030	3.5031	3.5032	3.5034	3.5035	3.5037
53 10	3.5038	3.5039	3.5041	3.5042	3.5043	3.5045	3.5046	3.5047	3.5049	3.5050
53 20	3.5051	3.5053	3.5054	3.5056	3.5057	3.5058	3.5060	3.5061	3.5062	3.5064
53 30	3.5065	3.5066	3.5068	3.5069	3.5070	3.5072	3.5073	3.5075	3.5076	3.5077
53 40	3.5079	3.5080	3.5081	3.5083	3.5084	3.5085	3.5087	3.5088	3.5089	3.5091
53 50	3.5092	3.5093	3.5095	3.5096	3.5097	3.5099	3.5100	3.5101	3.5103	3 5104
0 54 0	3.5105	3.5107	3.5108	3.5109	3.5111	3.5112	3.5113	3.5115	3.5116	3.5117
54 10	3.5119	3.5120	3.5122	3.5123	3.5124	3.5126	3.5127	3.5128	3.5130	3.5131
54 20	3.5132	3.5134	3.5135	3.5136	3.5138	3.5139	3.5140	3.5141	3.5143	3.5144
54 30	3.5145	3.5147	3.5148	3.5149	3.5151	3.5152	3.5153	3.5155	3.5156	3.5157
54 40	3.5159	3.5160	3.5161	3.5163	3.5164	3.5165	3.5167	3.5168	3.5169	3.5171
54 50	3.5172	3.5173	3.5175	3.5176	3.5177	3.5179	3.5180	3.5181	3.5183	3.5184
0 55 0	3.5185	3.5186	3.5188	3.5189	3.5190	3.5192	3.5193	3.5194	3.5196	3.5197
55 10	3.5198	3.5200	3.5201	3.5202	3.5204	3.5205	3.5206	3.5207	3.5209	3.5210
55 20	3.5211	3.5213	3.5214	3.5215	3.5217	3.5218	3.5219	3.5221	3.5222	3.5223
55 30	3.5224	3.5226	3.5227	3.5228	3.5230	3.5231	3.5232	3.5234	3.5235	3.5236
55 40	3.5237	3.5239	3.5240	3.5241	3.5243	3.5244	3.5245	3.5247	3.5248	3.5249
55 50	3.5250	3.5252	3.5253	3.5254	3.5256	3.5257	3.5258	3.5260	3.5261	3.5262
0 56 0	3.5263	3.5265	3.5266	3.5267	3.5269	3.5270	3.5271	3.5272	3.5274	3.5275
56 10	3.5276	3.5278	3.5279	3.5280	3.5281	3.5283	3.5284	3.5285	3.5287	3.5288
56 20	3.5289	3.5290	3.5292	3.5293	3.5294	3.5296	3.5297	3.5298	3.5299	3.5301
56 30	3.5302	3.5303	3.5305	3.5306	3.5307	3.5308	3.5310	3.5311	3.5312	3.5314
56 40	3.5315	3.5316	3.5317	3.5319	3.5320	3.5321	3.5322	3.5324	3.5325	3.5326
56 50	3.5328	3.5329	3.5330	3.5331	3.5333	3.5334	3.5335	3.5336	3.5338	3.5339
0 57 0	3.5340	3.5342	3.5343	3.5344	3.5345	3.5347	3.5348	3.5349	3.5350	3.5352
57 10	3.5353	3.5354	3.5355	3.5357	3.5358	3.5359	3.5361	3.5362	3.5363	3.5364
57 20	3.5366	3.5367	3.5368	3.5369	3.5371	3.5372	3.5373	3.5374	3.5376	3.5377
57 30	3.5378	3.5379	3.5381	3.5382	3.5383	3.5384	3.5386	3.5387	3.5388	3.5390
57 40	3.5391	3.5392	3.5393	3.5395	3.5396	3.5397	3.5398	3.5400	3.5401	3.5402
57 50	3.5403	3.5405	3.5406	3.5407	3.5408	3.5410	3.5411	3.5412	3.5413	3.5415
0 58 0	3.5416	3.5417	3.5418	3.5420	3.5421	3.5422	3.5423	3.5425	3.5426	3.5427
58 10	3.5428	3.5429	3.5431	3.5432	3.5433	3.5434	3 5436	3.5437	3.5438	3.5439
58 20	3.5441	3.5442	3.5443	3.5444	3.5446	3.5447	3.5448	3.5449	3.5451	3.5452
58 30	3.5453	3.5454	3.5456	3.5457	3.5458	3.5459	3.5460	3.5462	3.5463	3.5464
58 40	3.5465	3.5467	3.5468	3.5469	3.5470	3.5472	3.5473	3.5474	3.5475	3.5477
58 50	3.5478	3.5479	3.5480	3.5481	3.5483	3.5484	3.5485	3 5486	3.5488	3.5489
0 59 0	3.5490	3.5491	3.5492	3.5494	3.5495	3.5496	3.5497	3.5499	3.5500	3.5501
59 10	3.5502	3.5504	3.5505	3.5506	3.5507	3.5508	3.5510	3.5511	3.5512	3.5513
59 20	3.5514	3.5516	3.5517	3.5518	3.5519	3.5521	3.5522	3.5523	3.5524	3.5525
59 30	3.5527	3.5528	3.5529	3.5530	3.5532	3.5533	3.5534	3.5535	3.5536	3.5538
59 40	3.5539	3.5540	3.5541	3.5542	3.5544	3.5545	3.5546	3.5547	3.5549	3.5550
59 50	3.5551	3.5552	3.5553	3.5555	3.5556	3.5557	3.5558	3.5559	3.5561	3.5562

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 1h.	′ 0m.	″ 0s.	3.5563	3.5564	3.5565	3.5567	3.5568	3.5569	3.5570	3.5571	3.5573	3.5574
	0	10	3.5575	3.5576	3.5577	3.5579	3.5580	3.5581	3.5582	3.5583	3.5585	3.5586
	0	20	3.5587	3.5588	3.5589	3.5591	3.5592	3.5593	3.5594	3.5595	3.5597	3.5598
	0	30	3.5599	3.5600	3.5601	3.5603	3.5604	3.5605	3.5606	3.5607	3.5609	3.5610
	0	40	3.5611	3.5612	3.6613	3.5615	3.5616	3.5617	3.5618	3.5619	3.5621	3.5622
	0	50	3.5623	3.5624	3.5625	3.5626	3.5628	3.5629	3.5630	3.5631	3.5632	3.5634
1	1	0	3.5635	3.5636	3.5637	3.5638	3.5640	3.5641	3.5642	3.5643	3.5644	3 5645
	1	10	3.5647	3.5648	3.5649	3.5650	3.5651	3.5653	3.5654	3.5655	3.5656	3.5657
	1	20	3.5658	3.5660	3.5661	3.5662	3.5663	3.5664	3.5666	3.5667	3.5668	3.5669
	1	30	3.5670	3.5671	3.5673	3.5674	3.5675	3.5676	3.5677	3.5678	3.5680	3.5681
	1	40	3.5682	3.5683	3.5684	3.5686	3.5687	3.5688	3.5689	3.5690	3.5691	3.5693
	1	50	3.5694	3.5695	3.5696	3 5697	3.5698	3.5700	3.5701	3.5702	3.5703	3.5704
1	2	0	3.5705	3.5707	3.5708	3.5709	3.5710	3.5711	3.5712	3.5714	3.5715	3.5716
	2	10	3.5717	3.5718	3.5719	3.5721	3.5722	3.5723	3.5724	3.5725	3.5726	3 5728
	2	20	3.5729	3.5730	3.5731	3.5732	3.5733	3.5735	3.5736	3.5737	3.5738	3.5739
	2	30	3.5740	3.5741	3.5742	3.5744	3.5745	3.5746	3.5747	3.5748	3.5750	3.5751
	2	40	3.5752	3.5753	3.5754	3.5755	3.5756	3.5758	3.5759	3.5760	3.5761	3.5762
	2	50	3.5763	3.5765	3.5766	3.5767	3.5768	3.5769	3.5770	3.5771	3.5773	3.5774
1	3	0	3.5775	3.5776	3.5777	3.5778	3.5780	3.5781	3.5782	3 5783	3.5784	3.5785
	3	10	3.5786	3.5788	3.5789	3.5790	3 5791	3.5792	3.5793	3.5794	3.5796	3.5797
	3	20	3.5798	3.5799	3.5800	3.5801	3.5802	3.5804	3.5805	3.5806	3.5807	3.5808
	3	30	3.5809	3.5810	3.5812	3.5813	3.5814	3.5815	3.5816	3.5817	3.5818	3.5819
	3	40	3.5821	3.5822	3.5823	3.5824	3.5825	3.5826	3.5827	3.5829	3.5830	3.5831
	3	50	3.5832	3.5833	3.5834	3.5835	3.5837	3.5838	3.5839	3.5840	3.5841	3.5842
1	4	0	3.5843	3.5844	3.5846	3.5847	3.5848	3.5849	3.5850	3.5851	3.5852	3.5853
	4	10	3.5855	3.5856	3.5857	3.5858	3.5859	3.5860	3.5861	3.5862	3.5864	3.5865
	4	20	3.5866	3.5867	3.5868	3.5869	3.5870	3.5871	3.5873	3.5874	3.5875	3.5876
	4	30	3.5877	3.5878	3.5879	3.5880	3.5882	3.5883	3.5884	3.5885	3.5886	3.5887
	4	40	3.5888	3.5889	3.5891	3.5892	3.5893	3 5894	3.5895	3.5896	3.5897	3.5898
	4	50	3.5899	3.5901	3.5902	3.5903	3.5904	3.5905	3.5906	3.5907	3.5908	3.5910
1	5	0	3.5911	3.5912	3.5913	3.5914	3.5915	3.5916	3.5917	3.5918	3.5920	3.5921
	5	10	3.5922	3.5923	3.5924	3.5925	3.5926	3.5927	3.5928	3.5930	3.5931	3.5932
	5	20	3.5833	3.5934	3.5935	3.5936	3.5937	3.5938	3.5940	3.5941	3.5942	3.5943
	5	30	3.5944	3.5945	3.5946	3.5947	3.5948	3.5949	3.5951	3.5952	3.5953	3.5954
	5	40	3.5955	3.5956	3.5957	3.5958	3.5959	3.5960	3.5962	3.5963	3.5964	3.5965
	5	50	3.5966	3.5967	3.5968	3.5969	3.5970	3.5971	3.5973	3.5974	3.5975	3.5976
1	6	0	3.5977	3.5978	3.5979	3.5980	3.5981	3.5982	3.5984	3.5985	3.5986	3.5987
	6	10	3.5988	3.5989	3.5990	3.5991	3.5992	3.5993	3.5994	3.5996	3.5997	3.5998
	6	20	3.5999	3.6000	3.6001	3.6002	3.6003	3.6004	3.6005	3.6006	3.6008	3.6009
	6	30	3.6010	3.6011	3.6012	3.6013	3.6014	3.6015	3.6016	3.6017	3.6018	3.6020
	6	40	3.6021	3.6022	3.6023	3.6024	3.6025	3.6026	3.6027	3.6028	3.6029	3.6030
	6	50	3.6031	3.6033	3.6034	3.6035	3.6036	3.6037	3.6038	3.6039	3.6040	3.6041
1	7	0	3.6042	3.6043	3.6044	3.6046	3.6047	3.6048	3.6049	3.6050	3.6051	3.6052
	7	10	3.6053	3.6054	3.6055	3.6056	3.6057	3.6058	3.6060	3.6061	3.6062	3.6063
	7	20	3.6064	3.6065	3.6066	3.6067	3.6068	3.6069	3.6070	3.6071	3.6072	3.6073
	7	30	3.6075	3.6076	3.6077	3.6078	3.6079	3.6080	3.6081	3.6082	3.6083	3.6084
	7	40	3.6085	3.6086	3.6087	3.6088	3.6090	3.6091	3.6092	3.6093	3.6094	3.6095
	7	50	3.6096	3.6097	3.6098	3.6099	3.6100	3.6101	3.6102	3.6103	3.6104	3.6106
1	8	0	3.6107	3.6108	3.6109	3.6110	3.6111	3.6112	3.6113	3.6114	3.6115	3.6116
	8	10	3.6117	3.6118	3.6119	3.6120	3.6121	3.6123	3.6124	3.6125	3.6126	3.6127
	8	20	3.6128	3.6129	3.6130	3.6131	3.6132	3.6133	3.6134	3.6135	3.6136	3.6137
	8	30	3.6138	3.6139	3.6141	3.6142	3.6143	3.6144	3.6145	3.6146	3.6147	3.6148
	8	40	3.6149	3.6150	3.6151	3.6152	3.6153	3.6154	3.6155	3.6156	3.6157	3.6158
	8	50	3.6160	3.6161	3.6162	3.6163	3.6164	3.6165	3.6166	3.6167	3.6168	3.6169
1	9	0	3.6170	3.6171	3.6172	3.6173	3.6174	3.6175	3.6176	3.6177	3.6178	3.6179
	9	10	3.6180	3.6182	3.6183	3.6184	3.6185	3.6186	3.6187	3.6188	3.6189	3.6190
	9	20	3.6191	3.6192	3.6193	3.6194	3.6195	3.6196	3.6197	3.6198	3.6199	3.6200
	9	30	3.6201	3.6202	3.6203	3.6204	3.6206	3.6207	3.6208	3.6209	3.6210	3.6211
	9	40	3.6212	3.6213	3.6214	3.6215	3.6216	3.6217	3 6218	3.6219	3.6220	3.6221
	9	50	3.6222	3.6223	3.6224	3.6225	3.6226	3.6227	3.6228	3.6229	3.6230	3.6231

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{1}^{h}\,\overset{\prime}{10}^{m}\,\overset{\prime\prime}{0}^{s}$	3.6232	3.6234	3.6235	3.6236	3.6237	3.6238	3.6239	3.6240	3.6241	3.6242
10 10	3.6243	3.6244	3.6245	3.6246	3.6247	3.6248	3.6249	3.6250	3.6251	3.6252
10 20	3.6253	3.6254	3.6255	3.6256	3.6257	3.6258	3.6259	3 6260	3.6261	3.6262
10 30	3.6263	3.6264	3.6265	3.6266	3.6268	3.6269	3.6270	3.6271	3.6272	3.6273
10 40	3.6274	3.6275	3.6276	3.6277	3.6278	3.6279	3.6280	3.6281	3.6282	3.6283
10 50	3.6284	3.6285	3.6286	3.6287	3.6288	3.6289	3.6290	3.6291	3.6292	3.6293
1 11 0	3.6294	3.6295	3.6296	3.6297	3.6298	3.6299	3.6300	3.6301	3.6302	3.6303
11 10	3.6304	3.6305	3.6306	3.6307	3.6308	3.6309	3.6310	3.6311	3 6312	3.6313
11 20	3.6314	3.6315	8.6316	3.6317	3.6318	3.6320	3.6321	3.6322	3.6323	3.6324
11 30	3.6325	3.6326	3.6327	3.6328	3.6329	3.6330	3.6331	3.6332	3.6333	3.6334
11 40	3.6335	3.6336	3.6337	3.6338	3.6339	3.6340	3.6341	3.6342	3.6343	3.6344
11 50	3.6345	3.6346	3.6347	3.6348	3.6349	3.6350	3.6351	3.6352	3.6353	3.6354
1 12 0	3.6355	3.6356	3.6357	3.6358	3.6359	3.6360	3.6361	3.6362	3.6363	3.6364
12 10	3.6365	3.6366	3.6367	3.6368	3.6369	3.6370	3.6371	3.6372	3.6373	3.6374
12 20	3.6375	3.6376	3.6377	3.6378	3.6379	3.6380	3.6381	3.6382	3.6383	3.6384
12 30	3.6385	3.6386	3.6387	3.6388	3.6389	3.6390	3.6391	3.6392	3.6393	3.6394
12 40	3.6395	3.6396	3.6397	3.6398	3.6399	3.6400	3.6401	3.6402	3.6403	3.6404
12 50	3.6405	3.6406	3.6407	3.6408	3.6409	3.6410	3.6411	3.6412	3.6413	3.6414
1 13 0	3.6415	3.6416	3.6417	3.6418	3.6419	3.6420	3.6421	3.6422	3.6423	3.6424
13 10	3.6425	3.6426	3.6427	3.6428	3.6429	3.6430	3.6431	3.6432	3.6433	3.6434
13 20	3.6435	3.6436	3.6437	3.6437	3.6438	3.6439	3.6440	3.6441	3.6442	3.6443
13 30	3.6444	3.6445	3.6446	3.6447	3.6448	3.6449	3.6450	3.6451	3.6452	3.6453
13 40	3.6454	3.6455	3.6456	3.6457	3.6458	3.6459	3.6460	3.6461	3.6462	3.6463
13 50	3.6464	3.6465	3.6466	3.6467	3.6468	3.6469	3.6470	3.6471	3.6472	3.6473
1 14 0	3.6474	3.6475	3.6476	3.6477	3.6478	3.6479	3.6480	3.6481	3.6482	3.6483
14 10	3.6484	3.6485	3.6486	3.6487	3.6488	3.6488	3.6489	3.6490	3.6491	3.6492
14 20	3.6493	3.6494	3.6495	3.6496	3.6497	3.6498	3.6499	3.6500	3.6501	3.6502
14 30	3.6503	3.6504	3.6505	3.6506	3.6507	3.6508	3.6509	3.6510	3.6511	3.6512
14 40	3.6513	3.6514	3.6515	3.6516	3.6517	3.6518	3.6519	3.6520	3.6521	3.6521
14 50	3.6522	3.6523	3.6524	3.6525	3.6526	3.6527	3.6528	3.6529	3.6530	3.6531
1 15 0	3.6532	3.6533	3.6534	3.6535	3.6536	3.6537	3.6538	3.6539	3.6540	3.6541
15 10	3.6542	3.6543	3.6544	3.6545	3.6546	3.6547	3.6548	3.6549	3.6549	3.6550
15 20	3.6551	3.6552	3.6553	3.6554	3.6555	3.6556	3.6557	3.6558	3.6559	3.6560
15 30	3.6561	3.6562	3.6563	3.6564	3.6565	3.6566	3.6567	3.6568	3.6569	3.6570
15 40	3.6571	3.6572	3.6572	3.6573	3.6574	3.6575	3.6576	3.6577	3.6578	3.6579
15 50	3.6580	3.6581	3.6582	3.6583	3.6584	3.6585	3.6586	3.6587	3 6588	3.6589
1 16 0	3.6590	3.6591	3.6592	3.6593	3.6593	3.6594	3.6595	3.6596	3.6597	3.6598
16 10	3.6599	3.6600	3.6601	3.6602	3.6603	3.6604	3.6605	3.6606	3.6607	3.6608
16 20	3.6609	3.6610	3.6611	3.6611	3.6612	3.6613	3.6614	3.6615	3.6616	3.6617
16 30	3.6618	3.6619	3.6620	3.6621	3.6622	3.6623	3.6624	3.6625	3.6626	3.6627
16 40	3.6628	3.6629	3.6629	3.6630	3.6631	3.6632	3.6633	3.6634	3.6635	3.6636
16 50	3.6637	3.6638	3.6639	3.6640	3.6641	3.6642	3.6643	3.6644	3.6645	3.6645
1 17 0	3.6646	3.6647	3.6648	3.6649	3.6650	3.6651	3.6652	3.6653	3.6654	3.6655
17 10	3.6656	3.6657	3.6658	3.6659	3.6660	3.6660	3.6661	3.6662	3.6663	3.6664
17 20	3.6665	3.6666	3.6667	3.6668	3.6669	3.6670	3.6671	3.6672	3.6673	3.6674
17 30	3.6675	3.6675	3.6676	3.6677	3.6678	3.6679	3.6680	3.6681	3.6682	3.6683
17 40	3.6684	3.6685	3.6686	3.6687	3.6688	3.6689	3.6689	3.6690	3.6691	3.6692
17 50	3.6693	3.6694	3.6695	3.6696	3.6697	3.6698	3.6699	3.6700	3.6701	3.6702
1 18 0	3.6702	3.6703	3.6704	3.6705	3.6706	3.6707	3.6708	3.6809	3.6710	3.6711
18 10	3.6712	3.6713	3.6714	3.6715	3.6715	3.6716	3.6717	3.6718	3.6719	3.6720
18 20	3.6721	3.6722	3.6723	3.6724	3.6725	3.6726	3.6727	3.6727	3.6728	3.6729
18 30	3.6730	3.6731	3.6732	3.6733	3.6734	3.6735	3.6736	3.6737	3.6738	3.6738
18 40	3.6739	3.6740	3.6741	3.6742	3.6743	3.6744	3.6745	3.6746	3.6747	3.6748
18 50	3.6749	3.6750	3.6750	3.6751	3.6752	3.6753	3.6754	3.6755	3.6756	3.6757
1 19 0	3.6758	3.6759	3.6760	3.6761	3.6761	3.6762	3.6763	3.6764	3.6765	3.6766
19 10	3.6767	3.6768	3.6769	3.6770	3.6771	3.6772	3.6772	3.6773	3.6774	3.6775
19 20	3.6776	3.6777	3.6778	3.6779	3.6780	3.6781	3.6782	3.6782	3.6783	3.6784
19 30	3.6785	3.6786	3.6787	3.6788	3.6789	3.6790	3.6791	3.6792	3.6792	3.6793
19 40	3.6794	3.6795	3 6796	3.6797	3.6798	3.6799	3.6800	3.6801	3.6802	3.6802
19 50	3.6803	3.6804	3.6805	3.6806	3.6807	3.6808	3.6809	3.6810	3.6811	3.6812

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° ′ ″ 1h. 20m. 0s.	3.6812	3.6813	3.6814	3.6815	3.6816	3.6817	3.6818	3.6819	3.6820	3.6821
20 10	3.6821	3.6822	3.6823	3.6824	3.6825	3.6826	3.6827	3.6828	3.6829	3.6830
20 20	3.6830	3.6831	3.6832	3.6833	3.6834	3.6835	3.6836	3.6837	3.6838	3.6839
20 30	3.6839	3.6840	3.6841	3.6842	3.6843	3.6844	3.6845	3.6846	3.6847	3.6848
20 40	3.6848	3.6849	3.6850	3.6851	3.6852	3.6853	3.6854	3.6855	3.6856	3.6857
20 50	3.6857	3.6858	3.6859	3.6860	3.6861	3.6862	3.6863	3.6864	3.6865	3.6865
1 21 0	3.6866	3.6867	3.6868	3.6869	3.6870	3.6871	3.6872	3.6873	3.6874	3.6874
21 10	3.6875	3.6876	3.6877	3.6878	3.6879	3.6880	3.6881	3.6882	3.6882	3.6883
21 20	3.6884	3.6885	3.6886	3.6887	3.6888	3.6889	3.6890	3.6890	3.6891	3.6892
21 30	3.6893	3.6894	3.6895	3.6896	3.6897	3.6898	3.6898	3.6899	3.6900	3.6901
21 40	3.6902	3.6903	3.6904	3.6905	3.6906	3.6906	3.6907	3.6908	3.6909	3.6910
21 50	3.6911	3.6912	3.6913	3.6913	3.6914	3.6915	3.6916	3.6917	3.6918	3.6919
1 22 0	3.6920	3.6921	3.6921	3.6922	3.6923	3.6924	3.6925	3.6926	3.6927	3.6928
22 10	3.6928	3.6929	3.6930	3.6931	3.6932	3.6933	3.6934	3.6935	3.6936	3.6936
22 20	3.6937	3.6938	3.6939	3.6940	3.6941	3.6942	3.6943	3.6943	3.6944	3.6945
22 30	3.6946	3.3947	3.6948	3.6949	3.6950	3.6950	3.6951	3.6952	3.6953	3.6954
22 40	3.6955	3.6956	3.6957	3.6957	3.6958	3.6959	3.6960	3.6961	3.6962	3.6963
22 50	3.6964	3.6964	3.6965	3.6966	3.6967	3.6968	3.6969	3.6970	3.6971	3.6971
1 23 0	3.6972	3.6973	3.6974	3.6975	3.6976	3.6977	3.6978	3.6978	3.6979	3.6980
23 10	3.6981	3.6982	3.6983	3.6984	3.6984	3.6985	3.6986	3.6987	3.6988	3.6989
23 20	3.6990	3.6991	3.6991	3.6992	3.6993	3.6994	3.6995	3.6996	3.6997	3.6998
23 30	3.6998	3.6999	3.7000	3.7001	3.7002	3.7003	3.7004	3.7004	3.7005	3.7006
23 40	3.7007	3.7008	3.7009	3.7010	3.7010	3.7011	3.7012	3.7013	3.7014	3.7015
23 50	3.7016	3.7017	3.7017	3.7018	3.7019	3.7020	3.7021	3.7022	3.7023	3.7023
1 24 0	3.7024	3.7025	3.7026	3.7027	3.7028	3.7029	3.7029	3.7030	3.7031	3.7032
24 10	3.7033	3.7034	3.7035	3.7035	3.7036	3.7037	3.7038	3.7039	3.7040	3.7041
24 20	3.7042	3.7042	3.7043	3.7044	3.7045	3.7046	3.7047	3.7048	3.7048	3.7049
24 30	3.7050	3.7051	3.7052	3.7053	3.7054	3.7054	3.7055	3.7056	3.7057	3.7058
24 40	3.7059	3.7060	3.7060	3.7061	3.7062	3.7063	3.7064	3.7065	3.7065	3.7066
24 50	3.7067	3.7068	3.7069	3.7070	3.7071	3.7071	3.7072	3.7073	3.7074	3.7075
1 25 0	3.7076	3.7077	3.7077	3.7078	3.7079	3.7080	3.7081	3.7082	3.7083	3.7083
25 10	3.7084	3.7085	3.7086	3.7087	3.7088	3.7088	3.7089	3.7090	3.7091	3.7092
25 20	3.7093	3.7094	3.7094	3.7095	3.7096	3.7097	3.7098	3.7099	3.7099	3.7100
25 30	3.7101	3.7102	3.7103	3.7104	3.7105	3.7105	3.7106	3.7107	3.7108	3.7109
25 40	3.7110	3.7110	3.7111	3.7112	3.7113	3.7114	3.7115	3.7116	3.7116	3.7117
25 50	3.7118	3.7119	3.7120	3.7121	3.7121	3.7122	3.7123	3.7124	3.7125	3.7126
1 26 0	3.7126	3.7127	3.7128	3.7129	3.7130	3.7131	3.7132	3.7132	3.7133	3.7134
26 10	3.7135	3.7136	3.7137	3.7137	3.7138	3.7139	3.7140	3.7141	3.7142	3.7142
26 20	3.7143	3.7144	3.7145	3.7146	3.7147	3.7147	3.7148	3.7149	3.7150	3.7151
26 30	3.7152	3.7153	3.7153	3.7154	3.7155	3.7156	3.7157	3.7158	3.7159	3.7159
26 40	3.7160	3.7161	3.7162	3.7163	3.7163	3.7164	3.7165	3.7166	3.7167	3.7168
26 50	3.7168	3.7169	3.7170	3.7171	3.7172	3.7173	3.7173	3.7174	3.7175	3.7176
1 27 0	3.7177	3.7178	3.7178	3.7179	3.7180	3.7181	3.7182	3.7183	3.7183	3.7184
27 10	3.7185	3.7186	3.7187	3.7188	3.7188	3.7189	3.7190	3.7191	3.7192	3.7192
27 20	3.7193	3.7194	3.7195	3.7196	3.7197	3.7197	3.7198	3.7199	3.7200	3.7201
27 30	3.7202	3.7202	3.7203	3.7204	3.7205	3.7206	3.7207	3.7207	3.7208	3.7209
27 40	3.7210	3.7211	3.7212	3.7212	3.7213	3.7214	3.7215	3.7216	3.7216	3.7217
27 50	3.7218	3.7219	3.7220	3.7221	3.7221	3.7222	3.7223	3.7224	3.7225	3.7226
1 28 0	3.7226	3.7227	3.7228	3.7229	3.7230	3.7230	3.7231	3.7232	3.7233	3.7234
28 10	3.7235	3.7235	3.7236	3.7237	3.7238	3.7239	3.7239	3.7240	3.7241	3.7242
28 20	3.7243	3.7244	3.7244	3.7245	3.7246	3.7247	3.7248	3.7248	3.7249	3.7250
28 30	3.7251	3.7252	3.7253	3.7253	3.7254	3.7255	3.7256	3.7257	3.7257	3.7258
28 40	3.7259	3.7260	3.7261	3.7262	3.7262	3.7263	3.7264	3.7265	3.7266	3.7266
28 50	3.7267	3.7268	3.7269	3.7270	3.7271	3.7271	3.7272	3.7273	3.7274	3.7275
1 29 0	3.7275	3.7276	3.7277	3.7278	3.7279	3.7279	3.7280	3.7281	3.7282	3.7283
29 10	3.7284	3.7284	3.7285	3.7286	3.7287	3.7288	3.7288	3.7289	3.7290	3.7291
29 20	3.7292	3.7292	3.7293	3.7294	3.7295	3.7296	3.7297	3.7297	3.7298	3.7299
29 30	3.7300	3.7301	3.7301	3.7302	3.7303	3.7304	3.7305	3.7305	3.7306	3.7307
29 40	3.7308	3.7309	3.7309	3.7310	3.7311	3.7312	3.7313	3.7313	3.7314	3.7315
29 50	3.7316	3.7317	3.7317	3.7318	3.7319	3.7320	3.7321	3.7322	3.7322	3.7323

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	$\overset{\prime\prime}{0}$	$\overset{\prime\prime}{1}$	$\overset{\prime\prime}{2}$	$\overset{\prime\prime}{3}$	$\overset{\prime\prime}{4}$	$\overset{\prime\prime}{5}$	$\overset{\prime\prime}{6}$	$\overset{\prime\prime}{7}$	$\overset{\prime\prime}{8}$	$\overset{\prime\prime}{9}$
$\overset{\circ}{1}^{h}\cdot\overset{\prime}{30}^{m}\cdot\ \overset{\prime\prime}{0}^{s}$	3.7324	3.7325	3.7326	3.7326	3.7327	3.7328	3.7329	3.7330	3.7330	3.7331
30 10	3.7332	3.7333	3.7334	3.7334	3.7335	3.7336	3.7337	3.7338	3.7338	3.7339
30 20	3.7340	3.7341	3.7342	3.7342	3.7343	3.7344	3.7345	3.7346	3.7346	3.7347
30 30	3.7348	3.7349	3.7350	3.7350	3.7351	3.7352	3.7353	3.7354	3.7354	3.7355
30 40	3.7356	3.7357	3.7358	3.7358	3.7359	3.7360	3.7361	3.7362	3.7362	3.7363
30 50	3.7364	3.7365	3.7366	3.7366	3.7367	3.7368	3.7369	3.7370	3.7370	3.7371
1 31 0	3.7372	3.7373	3.7374	3.7374	3.7375	3.7376	3.7377	3.7377	3.7378	3.7379
31 10	3.7380	3.7381	3.7381	3.7382	3.7383	3.7384	3.7385	3.7385	3.7386	3.7387
31 20	3.7388	3.7389	3.7389	3.7390	3.7391	3.7392	3.7393	3.7393	3.7394	3.7395
31 30	3.7396	3.7397	3.7397	3.7398	3.7399	3.7400	3.7400	3.7401	3.7402	3.7403
31 40	3.7404	3.7404	3.7405	3.7406	3.7407	3.7408	3.7408	3.7409	3.7410	3.7411
31 50	3.7412	3.7412	3.7413	3.7414	3.7415	3.7415	3.7416	3.7417	3.7418	3.7419
1 32 0	3.7419	3.7420	3.7421	3.7422	3.7423	3.7423	3.7424	3.7425	3.7426	3.7426
32 10	3.7427	3.7428	3.7429	3.7430	3.7430	3.7431	3.7432	3.7433	3.7434	3.7434
32 20	3.7435	3.7436	3.7437	3.7437	3.7438	3.7439	3.7440	3.7441	3.7441	3.7442
32 30	3.7443	3.7444	3.7444	3.7445	3.7446	3.7447	3.7448	3.7448	3.7449	3.7450
32 40	3.7451	3.7452	3.7452	3.7453	3.7454	3.7455	3.7455	3.7456	3.7457	3.7458
32 50	3.7459	3.7459	3.7460	3.7461	3.7462	3.7462	3.7463	3.7464	3.7465	3.7466
1 33 0	3.7466	3.7467	3 7468	3.7469	3.7469	3.7470	3.7471	3.7472	3.7473	3.7473
33 10	3.7474	3.7475	3.7476	3.7476	3.7477	3.7478	3.7479	3.7480	3.7480	3.7481
33 20	3.7482	3.7483	3.7483	3.7484	3.7485	3.7486	3.7487	3.7487	3.7488	3.7489
33 30	3.7490	3.7490	3.7491	3.7492	3.7493	3.7493	3.7494	3.7495	3.7496	3.7497
33 40	3.7497	3.7498	3.7499	3.7500	3.7500	3.7501	3.7502	3.7503	3.7504	3.7504
33 50	3.7505	3.7506	3.7507	3.7507	3.7508	3.7509	3.7510	3.7510	3.7511	3.7512
1 34 0	3.7513	3.7514	3.7514	3.7515	3.7516	3.7517	3.7517	3.7518	3.7519	3.7520
34 10	3.7520	3.7521	3.7522	3.7523	3.7524	3.7524	3.7525	3.7526	3.7527	3.7527
34 20	3.7528	3.7529	3.7530	3.7530	3.7531	3.7532	3.7533	3.7534	3.7534	3.7535
34 30	3.7536	3.7537	3.7537	3.7538	3.7539	3.7540	3.7540	3.7541	3.7542	3.7543
34 40	3.7543	3.7544	3.7545	3.7546	3.7547	3.7547	3.7548	3.7549	3.7550	3.7550
34 50	3.7551	3.7552	3.7553	3.7553	3.7554	3.7555	3.7556	3.7556	3.7557	3.7558
1 35 0	3.7559	3.7560	3.7560	3.7561	3.7562	3.7563	3.7563	3.7564	3.7565	3.7566
35 10	3.7566	3.7567	3.7568	3.7569	3.7569	3.7570	3.7571	3.7572	3.7572	3.7573
35 20	3.7574	3.7575	3.7575	3.7576	3.7577	3.7578	3.7579	3.7579	3.7580	3.7581
35 30	3.7582	3.7582	3.7583	3.7584	3.7585	3.7585	3.7586	3.7587	3.7588	3.7588
35 40	3.7589	3.7590	3.7591	3.7591	3.7592	3.7593	3.7594	3.7594	3.7595	3.7596
35 50	3.7597	3.7597	3.7598	3.7599	3.7600	3.7600	3.7601	3.7602	3.7603	3.7603
1 36 0	3.7604	3.7605	3.7606	3.7606	3.7607	3.7608	3.7609	3.7609	3.7610	3.7611
36 10	3.7612	3.7613	3.7613	3.7614	3.7615	3.7616	3.7616	3.7617	3.7618	3.7619
36 20	3.7619	3.7620	3.7621	3.7622	3.7622	3.7623	3.7624	3.7625	3.7625	3.7626
36 30	3.7627	3.7628	3.7628	3.7629	3.7630	3.7631	3.7631	3.7632	3.7633	3.7634
36 40	3.7634	3.7635	3.7636	3.7637	3.7637	3.7638	3.7639	3.7640	3.7640	3.7641
36 50	3.7642	3.7643	3.7643	3.7644	3.7645	3.7645	3.7646	3.7647	3.7648	3.7648
1 37 0	3.7649	3.7650	3.7651	3.7651	3.7652	3.7653	3.7654	3.7654	3.7655	3.7656
37 10	3.7657	3.7657	3.7658	3.7659	3.7660	3.7660	3.7661	3.7662	3.7663	3.7663
37 20	3.7664	3.7665	3.7666	3.7666	3.7667	3.7668	3.7669	3.7669	3.7670	3.7671
37 30	3.7672	3.7672	3.7673	3.7674	3.7675	3.7675	3.7676	3.7677	3.7677	3.7678
37 40	3.7679	3.7680	3.7681	3.7681	3.7682	3.7683	3.7683	3.7684	3.7685	3.7686
37 50	3.7686	3.7687	3.7688	3.7689	3.7689	3.7690	3.7691	3.7692	3.7692	3.7693
1 38 0	3.7694	3.7695	3.7695	3.7696	3.7697	3.7697	3.7698	3.7699	3.7700	3.7700
38 10	3.7701	3.7702	3.7703	3.7703	3.7704	3.7705	3.7706	3.7706	3.7707	3.7708
38 20	3.7709	3.7709	3.7710	3.7711	3.7711	3.7712	3.7713	3.7714	3.7714	3.7715
38 30	3.7716	3.7717	3.7717	3.7718	3.7719	3.7720	3.7720	3.7721	3.7722	3.7722
38 40	3.7723	3.7724	3.7725	3.7725	3.7726	3.7727	3.7728	3.7728	3.7729	3.7730
38 50	3.7731	3.7731	3.7732	3.7733	3.7733	3.7734	3.7735	3.7736	3.7736	3.7737
1 39 0	3.7738	3.7739	3.7739	3.7740	3.7741	3.7742	3.7742	3.7743	3.7744	3.7744
39 10	3.7745	3.7746	3.7747	3.7747	3.7748	3.7749	3.7750	3.7750	3.7751	3.7752
39 20	3.7752	3.7753	3.7754	3.7755	3.7755	3.7756	3.7757	3.7758	3.7758	3.7759
39 30	3.7760	3.7760	3.7761	3.7762	3.7763	3.7763	3.7764	3.7765	3.7766	3.7766
39 40	3.7767	3.7768	3.7768	3.7769	3.7770	3.7771	3.7771	3.7772	3.7773	3.7774
39 50	3.7774	3.7775	3.7776	3.7776	3.7777	3.7778	3.7779	3.7779	3.7780	3.7781

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{1}^{h.}$	$\overset{\prime}{0}^{m.}$	$0^{s.}$	3.7782	3.7782	3.7783	3.7784	3.7784	3.7785	3.7786	3.7787	3.7787	3.7788
	40	10	3.7789	3.7789	3.7790	3.7791	3.7792	3.7792	3.7793	3.7794	3.7795	3.7795
	40	20	3.7796	3.7797	3.7797	3.7798	3.7799	3.7800	3.7800	3.7801	3.7802	3.7802
	40	30	3.7803	3.7804	3.7805	3.7805	3.7806	3.7807	3.7807	3.7808	3.7809	3.7810
	40	40	3.7810	3.7811	3.7812	3.7813	3.7813	3.7814	3.7815	3.7815	3.7816	3.7817
	40	50	3.7818	3.7818	3.7819	3.7820	3.7820	3.7821	3.7822	3.7823	3.7823	3.7824
1	41	0	3.7825	3.7825	3.7826	3.7827	3.7828	3.7828	3.7829	3.7830	3.7830	3.7831
	41	10	3.7832	3.7833	3.7833	3.7834	3.7835	3.7835	3.7836	3.7837	3.7838	3.7838
	41	20	3.7839	3.7840	3.7840	3.7841	3.7842	3.7843	3.7843	3.7844	3.7845	3.7845
	41	30	3.7846	3.7847	3.7848	3.7848	3.7849	3.7850	3.7850	3.7851	3.7852	3.7853
	41	40	3.7853	3.7854	3.7855	3.7855	3.7856	3.7857	3.7858	3.7858	3.7859	3.7860
	41	50	3.7860	3.7861	3.7862	3.7863	3.7863	3.7864	3.7865	3.7865	3.7866	3.7867
1	42	0	3.7868	3.7868	3.7869	3.7870	3.7870	3.7871	3.7872	3.7872	3.7873	3.7874
	42	10	3.7875	3.7875	3.7876	3.7877	3.7877	3.7878	3.7879	3.7880	3.7880	3.7881
	42	20	3.7882	3.7882	3.7883	3.7884	3.7885	3.7885	3.7886	3.7887	3.7887	3.7888
	42	30	3.7889	3.7889	3.7890	3.7891	3.7892	3.7892	3.7893	3.7894	3.7894	3.7895
	42	40	3.7896	3.7897	3.7897	3.7898	3.7899	3.7899	3.7900	3.7901	3.7901	3.7902
	42	50	3.7903	3.7904	3.7904	3.7905	3.7906	3.7906	3.7907	3.7908	3.7908	3.7909
1	43	0	3.7910	3.7911	3.7911	3.7912	3.7913	3.7913	3.7914	3.7915	3.7916	3.7916
	43	10	3.7917	3.7918	3.7918	3.7919	3.7920	3.7920	3.7921	3.7922	3.7923	3.7923
	43	20	3.7924	3.7925	3.7925	3.7926	3.7927	3.7927	3.7928	3.7929	3.7930	3.7930
	43	30	3.7931	3.7932	3.7932	3.7933	3.7934	3.7934	3.7935	3.7936	3.7937	3.7937
	43	40	3.7938	3.7939	3.7939	3.7940	3.7941	3.7941	3.7942	3.7943	3.7943	3.7944
	43	50	3.7945	3.7946	3.7946	3.7947	3.7948	3.7948	3.7949	3.7950	3.7950	3.7951
1	44	0	3.7952	3.7953	3.7953	3.7954	3.7955	3.7955	3.7956	3.7957	3.7957	3.7958
	44	10	3.7959	3.7959	3.7960	3.7961	3.7962	3.7962	3.7963	3.7964	3.7964	3.7965
	44	20	3.7966	3.7966	3.7967	3.7968	3.7969	3.7969	3.7970	3.7971	3.7971	3.7972
	44	30	3.7973	3.7973	3.7974	3.7975	3.7975	3.7976	3.7977	3.7978	3.7978	3.7979
	44	40	3.7980	3.7980	3.7981	3.7982	3.7982	3.7983	3.7984	3.7984	3.7985	3.7986
	44	50	3.7987	3.7987	3.7988	3.7989	3.7989	3.7990	3.7991	3.7991	3.7992	3.7993
1	45	0	3.7993	3.7994	3.7995	3.7995	3.7996	3.7997	3.7998	3.7998	3.7999	3.8000
	45	10	3.8000	3.8001	3.8002	3.8002	3.8003	3.8004	3.8004	3.8005	3.8006	3.8006
	45	20	3.8007	3.8008	3.8009	3.8009	3.8010	3.8011	3.8011	3.8012	3.8013	3.8013
	45	30	3.8014	3.8015	3.8015	3.8016	3.8017	3.8017	3.8018	3.8019	3.8020	3.8020
	45	40	3.8021	3.8022	3.8022	3.8023	3.8024	3.8024	3.8025	3.8026	3.8026	3.8027
	45	50	3.8028	3.8028	3.8029	3.8030	3.8030	3.8031	3.8032	3.8033	3.8033	3.8034
1	46	0	3.8035	3.8035	3.8036	3.8036	3.8037	3.8038	3.8039	3.8039	3.8040	3.8041
	46	10	3.8041	3.8042	3.8043	3.8043	3.8044	3.8045	3.8045	3.8046	3.8047	3.8048
	46	20	3.8048	3.8049	3.8050	3.8050	3.8051	3.8052	3.8052	3.8053	3.8054	3.8054
	46	30	3.8055	3.8056	3.8056	3.8057	3.8058	3.8058	3.8059	3.8060	3.8060	3.8061
	46	40	3.8062	3.8062	3.8063	3.8064	3.8065	3.8065	3.8066	3.8067	3.8067	3.8068
	46	50	3.8069	3.8069	3.8070	3.8071	3.8071	3.8072	3.8073	3.8073	3.8074	3.8075
1	47	0	3.8075	3.8076	3.8077	3.8077	3.8078	3.8079	3.8079	3.8080	3.8081	3.8081
	47	10	3.8082	3.8083	3.8083	3.8084	3.8085	3.8085	3.8086	3.8087	3.8088	3.8088
	47	20	3.8089	3.8090	3.8090	3.8091	3.8092	3.8092	3.8093	3.8094	3.8094	3.8095
	47	30	3.8096	3.8096	3.8097	3.8098	3.8098	3.8099	3.8099	3.8100	3.8101	3.8102
	47	40	3.8102	3.8103	3.8104	3.8104	3.8105	3.8106	3.8106	3.8107	3.8108	3.8108
	47	50	3.8109	3.8110	3.8110	3.8111	3.8112	3.8112	3.8113	3.8114	3.8114	3.8115
1	48	0	3.8116	3.8116	3.8117	3.8118	3.8118	3.8119	3.8120	3.8120	3.8121	3.8122
	48	10	3.8122	3.8123	3.8124	3.8124	3.8125	3.8126	3.8126	3.8127	3.8128	3.8128
	48	20	3.8129	3.8130	3.8130	3.8131	3.8132	3.8132	3.8133	3.8134	3.8134	3.8135
	48	30	3.8136	3.8136	3.8137	3.8138	3.8138	3.8139	3.8140	3.8140	3.8141	3.8142
	48	40	3.8142	3.8143	3.8144	3.8144	3.8145	3.8146	3.8146	3.8147	3.8148	3.8148
	48	50	3.8149	3.8150	3.8150	3.8151	3.8152	3.8152	3.8153	3.8154	3.8154	3.8155
1	49	0	3.8156	3.8156	3.8157	3.8158	3.8158	3.8159	3.8160	3.8160	3.8161	3.8162
	49	10	3.8162	3.8163	3.8164	3.8164	3.8165	3.8166	3.8166	3.8167	3.8168	3.8168
	49	20	3.8169	3.8170	3.8170	3.8171	3.8172	3.8172	3.8173	3.8174	3.8174	3.8175
	49	30	3.8176	3.8176	3.8177	3.8178	3.8178	3.8179	3.8180	3.8180	3.8181	3.8182
	49	40	3.8182	3.8183	3.8184	3.8184	3.8185	3.8185	3.8186	3.8187	3.8188	3.8188
	49	50	3.8189	3.8190	3.8190	3.8191	3.8191	3.8192	3.8193	3.8193	3.8194	3.8195

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{1}{}^{h}\,\overset{\prime}{50}{}^{m}\,\overset{\prime\prime}{0}{}^{s}$	3.8195	3.8196	3.8197	3.8197	3.8198	3.8199	3.8199	3.8200	3.8201	3.8201
50 10	3.8202	3.8203	3.8203	3.8204	3.8205	3.8205	3.8206	3.8207	3.8207	3.8208
50 20	3.8209	3.8209	3.8210	3.8211	3.8211	3.8212	3.8213	3.8213	3.8214	3.8214
50 30	3.8215	3.8216	3.8216	3.8217	3.8218	3.8218	3.8219	3.8220	3.8220	3.8221
50 40	3.8222	3.8222	3.8223	3.8224	3.8224	3.8225	3.8226	3.8226	3.8227	3.8228
50 50	3.8228	3.8229	3.8230	3.8230	3.8231	3.8231	3.8232	3.8233	3.8233	3.8234
1 51 0	3.8235	3.8235	3.8236	3.8237	3.8237	3.8238	3.8239	3.8239	3.8240	3.8241
51 10	3.8241	3.8242	3.8243	3.8243	3.8244	3.8245	3.8245	3.8246	3.8246	3.8247
51 20	3.8248	3.8248	3.8249	3.8250	3.8250	3.8251	3.8252	3.8252	3.8253	3.8254
51 30	3.8254	3.8255	3.8256	3.8256	3.8257	3.8258	3.8258	3.8259	3.8259	3.8260
51 40	3.8261	3.8261	3.8262	3.8263	3.8263	3.8264	3.8265	3.8265	3.8266	3.8267
51 50	3.8267	3.8268	3.8269	3.8269	3.8270	3.8270	3.8271	3.8272	3.8272	3.8273
1 52 0	3.8274	3.8274	3.8275	3.8276	3.8276	3.8277	3.8278	3.8278	3.8279	3.8280
52 10	3.8280	3.8281	3.8281	3.8282	3.8283	3.8283	3.8284	3.8285	3.8285	3.8286
52 20	3.8287	3.8287	3.8288	3.8289	3.8289	3.8290	3.8290	3.8291	3.8292	3.8292
52 30	3.8293	3.8294	3.8294	3.8295	3.8296	3.8296	3.8297	3.8298	3.8298	3.8299
52 40	3.8299	3.8300	3.8301	3.8301	3.8302	3.8303	3.8303	3.8304	3.8305	3.8305
52 50	3.8306	3.8307	3.8307	3.8308	3.8308	3.8309	3.8310	3.8310	3.8311	3.8312
1 53 0	3.8312	3.8313	3.8314	3.8314	3.8315	3.8315	3.8316	3.8317	3.8317	3.8318
53 10	3.8319	3.8319	3.8320	3.8321	3.8321	3.8322	3.8323	3.8323	3.8324	3.8324
53 20	3.8325	3.8326	3.8326	3.8327	3.8328	3.8328	3.8329	3.8330	3.8330	3.8331
53 30	3.8331	3.8332	3.8333	3.8333	3.8334	3.8335	3.8335	3.8336	3.8337	3.8337
53 40	3.8338	3.8338	3.8339	3.8340	3.8340	3.8341	3.8342	3.8342	3.8343	3.8344
53 50	3.8344	3.8345	3.8345	3.8346	3.8347	3.8347	3.8348	3.8349	3.8349	3.8350
1 54 0	3.8351	3.8351	3.8352	3.8352	3.8353	3.8354	3.8354	3.8355	3.8356	3.8356
54 10	3.8357	3.8358	3.8358	3.8359	3.8359	3.8360	3.8361	3.8361	3.8362	3.8363
54 20	3.8363	3.8364	3.8365	3.8365	3.8366	3.8366	3.8367	3.8368	3.8368	3.8369
54 30	3.8370	3.8370	3.8371	3.8371	3.8372	3.8373	3.8373	3.8374	3.8375	3.8375
54 40	3.8376	3.8377	3.8377	3.8378	3.8378	3.8379	3.8380	3.8380	3.8381	3.8382
54 50	3.8382	3.8383	3.8383	3.8384	3.8385	3.8385	3.8386	3.8387	3.8387	3.8388
1 55 0	3.8388	3.8389	3.8390	3.8390	3.8391	3.8392	3.8392	3.8393	3.8394	3.8394
55 10	3.8395	3.8395	3.8396	3.8397	3.8397	3.8398	3.8399	3.8399	3.8400	3.8400
55 20	3.8401	3.8402	3.8402	3.8403	3.8404	3.8404	3.8405	3.8405	3.8406	3.8407
55 30	3.8407	3.8408	3.8409	3.8409	3.8410	3.8410	3.8411	3.8412	3.8412	3.8413
55 40	3.8414	3.8414	3.8415	3.8415	3.8416	3.8417	3.8417	3.8418	3.8419	3.8419
55 50	3.8420	3.8420	3.8421	3.8422	3.8422	3.8423	3.8424	3.8424	3.8425	3.8425
1 56 0	3.8426	3.8427	3.8427	3.8428	3.8429	3.8429	3.8430	3.8430	3.8431	3.8432
56 10	3.8432	3.8433	3.8434	3.8434	3.8435	3.8435	3.8436	3.8437	3.8437	3.8438
56 20	3.8439	3.8439	3.8440	3.8440	3.8441	3.8442	3.8442	3.8443	3.8444	3.8444
56 30	3.8445	3.8445	3.8446	3.8447	3.8447	3.8448	3.8448	3.8449	3.8450	3.8450
56 40	3.8451	3.8452	3.8452	3.8453	3.8453	3.8454	3.8455	3.8455	3.8456	3.8457
56 50	3.8457	3.8458	3.8458	3.8459	3.8460	3.8460	3.8461	3.8462	3.8462	3.8463
1 57 0	3.8463	3.8464	3.8465	3.8465	3.8466	3.8466	3.8467	3.8468	3.8468	3.8469
57 10	3.8470	3.8470	3.8471	3.8471	3.8472	3.8473	3.8473	3.8474	3.8474	3.8475
57 20	3.8476	3.8476	3.8477	3.8478	3.8478	3.8479	3.8479	3.8480	3.8481	3.8481
57 30	3.8482	3.8483	3.8483	3.8484	3.8484	3.8485	3.8486	3.8486	3.8487	3.8487
57 40	3.8488	3.8489	3.8489	3.8490	3.8491	3.8491	3.8492	3.8492	3.8493	3.8494
57 50	3.8494	3.8495	3.8495	3.8496	3.8497	3.8497	3.8498	3.8499	3.8499	3.8500
1 58 0	3.8500	3.8501	3.8502	3.8502	3.8503	3.8503	3.8504	3.8505	3.8505	3.8506
58 10	3.8506	3.8507	3.8508	3.8508	3.8509	3.8510	3.8510	3.8511	3.8511	3.8512
58 20	3.8513	3.8513	3.8514	3.8514	3.8515	3.8516	3.8516	3.8517	3.8517	3.8518
58 30	3.8519	3.8519	3.8520	3.8521	3.8521	3.8522	3.8522	3.8523	3.8524	3.8524
58 40	3.8525	3.8525	3.8526	3.8527	3.8527	3.8528	3.8528	3.8529	3.8530	3.8530
58 50	3.8531	3.8532	3.8532	3.8533	3.8533	3.8534	3.8535	3.8535	3.8536	3.8536
1 59 0	3.8537	3.8538	3.8538	3.8539	3.8539	3.8540	3.8541	3.8541	3.8542	3.8542
59 10	3.8543	3.8544	3.8544	3.8545	3.8545	3.8546	3.8547	3.8547	3.8548	3.8549
59 20	3.8549	3.8550	3.8550	3.8551	3.8552	3.8552	3.8553	3.8553	3.8554	3.8555
59 30	3.8555	3.8556	3.8556	3.8557	3.8558	3.8558	3.8559	3.8559	3.8560	3.8561
59 40	3.8561	3.8562	3.8562	3.8563	3.8564	3.8564	3.8565	3.8565	3.8566	3.8567
59 50	3.8567	3.8568	3.8568	3.8569	3.8570	3.8570	3.8571	3.8572	3.8572	3.8573

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
° 2h.	′ 0m.	″ 0s.	3.8573	3.8574	3.8575	3.8575	3.8576	3.8576	3.8577	3.8578	3.8578	3.8579
	0	10	3.8579	3.8580	3.8581	3.8581	3.8582	3.8582	3.8583	3.8584	3.8584	3.8585
	0	20	3.8585	3.8586	3.8587	3.8587	3.8588	3.8588	3.8589	3.8590	3.8590	3.8591
	0	30	3.8591	3.8592	3.8593	3.8593	3.8594	3.8594	3.8595	3.8596	3.8596	3.8597
	0	40	3.8597	3.8598	3.8599	3.8599	3.8600	3.8600	3.8601	3.8602	3.8602	3.8603
	0	50	3.8603	3.8604	3.8605	3.8605	3.8606	3.8606	3.8607	3.8608	3.8608	3.8609
2	1	0	3.8609	3.8610	3.8611	3.8611	3.8612	3.8612	3.8613	3.8614	3 8614	3.8615
	1	10	3.8615	3.8616	3.8617	3.8617	3.8618	3.8618	3.8619	3.8620	3.8620	3.8621
	1	20	3.8621	3.8622	3.8623	3.8623	3.8624	3.8624	3.8625	3.8625	3.8626	3.8627
	1	30	3.8627	3.8628	3.8628	3.8629	3.8630	3.8630	3.8631	3.8631	3.8632	3.8633
	1	40	3.8633	3.8634	3.8634	3.8635	3.8636	3.8636	3.8637	3.8637	3.8638	3.8639
	1	50	3.8639	3.8640	3.8640	3.8641	3.8642	3.8642	3.8643	3.8643	3.8644	3.8645
2	2	0	3.8645	3.8646	3.8646	3.8647	3.8647	3.8648	3.8649	3.8649	3.8650	3.8650
	2	10	3.8651	3.8652	3.8652	3.8653	3.8653	3.8654	3.8655	3.8655	3.8656	3.8656
	2	20	3.8657	3.8658	3.8658	3.8659	3.8659	3.8660	3.8661	3.8661	3.8662	3.8662
	2	30	3.8663	3.8663	3.8664	3.8665	3.8665	3.8666	3.8666	3.8667	3.8668	3.8668
	2	40	3.8669	3.8669	3.8670	3.8671	3.8671	3.8672	3.8672	3.8673	3.8673	3.8674
	2	50	3.8675	3.8675	3.8676	3.8676	3.8677	3.8678	3.8678	3.8679	3.8679	3.8680
2	3	0	3.8681	3.8681	3.8682	3.8682	3.8683	3.8684	3.8684	3.8685	3.8685	3.8686
	3	10	3.8686	3.8687	3.8688	3.8688	3.8689	3.8689	3.8690	3.8691	3.8691	3.8692
	3	20	3.8692	3.8693	3.8693	3.8694	3.8695	3.8695	3.8696	3.8696	3.8697	3.8698
	3	30	3.8698	3.8699	3.8699	3.8700	3.8701	3.8701	3.8702	3.8702	3.8703	3.8703
	3	40	3.8704	3.8705	3.8705	3.8706	3.8706	3.8707	3.8708	3.8708	3.8709	3.8709
	3	50	3.8710	3.8710	3.8711	3.8712	3.8712	3.8713	3.8713	3.8714	3.8715	3.8715
2	4	0	3.8716	3.8716	3.8717	3.8717	3.8718	3.8719	3.8719	3.8720	3.8720	3.8721
	4	10	3.8722	3.8722	3.8723	3.8723	3.8724	3.8724	3.8725	3.8726	3.8726	3.8727
	4	20	3.8727	3.8728	3.8729	3.8729	3.8730	3.8730	3.8731	3.8731	3.8732	3.8733
	4	30	3.8733	3.8734	3.8734	3.8735	3.8736	3.8736	3.8737	3.8737	3.8738	3.8738
	4	40	3.8739	3.8740	3.8740	3.8741	3.8741	3.8742	3.8742	3.8743	3.8744	3.8744
	4	50	3.8745	3.8745	3.8746	3.8747	3.8747	3.8748	3.8748	3.8749	3.8749	3.8750
2	5	0	3.8751	3.8751	3.8752	3.8752	3.8753	3.8754	3.8754	3.8755	3.8755	3.8756
	5	10	3.8756	3.8757	3.8758	3.8758	3.8759	3.8759	3.8760	3.8760	3.8761	3.8762
	5	20	3.8762	3.8763	3.8763	3.8764	3.8764	3.8765	3.8766	3.8766	3.8767	3.8767
	5	30	3.8768	3.8769	3.8769	3.8770	3.8770	3.8771	3.8771	3.8772	3.8773	3.8773
	5	40	3.8774	3.8774	3.8775	3.8775	3.8776	3.8777	3.8777	3.8778	3.8778	3.8779
	5	50	3.8779	3.8780	3.8781	3.8781	3.8782	3.8782	3.8783	3.8783	3.8784	3.8785
2	6	0	3.8785	3.8786	3.8786	3.8787	3.8788	3.8788	3.8789	3.8789	3.8790	3.8790
	6	10	3.8791	3.8792	3.8792	3.8793	3.8793	3.8794	3.8794	3.8795	3.8796	3.8796
	6	20	3.8797	3.8797	3.8798	3.8798	3.8799	3.8800	3.8800	3.8801	3.8801	3.8802
	6	30	3.8802	3.8803	3.8804	3.8804	3.8805	3.8805	3.8806	3.8806	3.8807	3.8808
	6	40	3.8808	3.8809	3.8809	3.8810	3.8810	3.8811	3.8812	3.8812	3.8813	3.8813
	6	50	3.8814	3.8814	3.8815	3.8816	3.8816	3.8817	3.8817	3.8818	3.8818	3.8819
2	7	0	3.8820	3.8820	3.8821	3.8821	3.8822	3.8822	3.8823	3.8824	3.8824	3.8825
	7	10	3.8825	3.8826	3.8826	3.8827	3.8828	3.8828	3.8829	3.8829	3.8830	3.8830
	7	20	3.8831	3.8832	3.8832	3.8833	3.8833	3.8834	3.8834	3.8835	3.8835	3.8836
	7	30	3.8837	3.8837	3.8838	3.8838	3.8839	3.8839	3.8840	3.8841	3.8841	3.8842
	7	40	3.8842	3.8843	3.8843	3.8844	3.8845	3.8845	3.8846	3.8846	3.8847	3.8847
	7	50	3.8848	3.8849	3.8849	3.8850	3.8850	3.8851	3.8851	3.8852	3.8852	3.8853
2	8	0	3.8854	3.8854	3.8855	3.8855	3.8856	3.8856	3.8857	3.8858	3.8858	3.8859
	8	10	3.8859	3.8860	3.8860	3.8861	3.8862	3.8862	3.8863	3.8863	3.8864	3.8864
	8	20	3.8865	3.8865	3.8866	3.8867	3.8867	3.8868	3.8868	3.8869	3.8869	3.8870
	8	30	3.8871	3.8871	3.8872	3.8872	3.8873	3.8873	3.8874	3.8874	3.8875	3.8876
	8	40	3.8876	3.8877	3.8877	3.8878	3.8878	3.8879	3.8880	3.8880	3.8881	3.8881
	8	50	3.8882	3.8882	3.8883	3.8883	3.8884	3.8885	3.8885	3.8886	3.8886	3.8887
2	9	0	3.8887	3.8888	3.8889	3.8889	3.8890	3.8890	3.8891	3.8891	3.8892	3.8892
	9	10	3.8893	3.8894	3.8894	3.8895	3.8895	3.8896	3.8896	3.8897	3.8897	3.8898
	9	20	3.8899	3.8899	3.8900	3.8900	3.8901	3.8901	3.8902	3.8903	3.8903	3.8904
	9	30	3.8904	3.8905	3.8905	3.8906	3.8906	3.8907	3.8908	3.8908	3.8909	3.8909
	9	40	3.8910	3.8910	3 8911	3.8911	3.8912	3.8912	3.8913	3.8914	3.8914	3.8915
	9	50	3.8915	3.8916	3.8916	3.8917	3.8918	3.8918	3.8919	3.8919	3.8920	3.8920

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{2}^{h}\cdot\overset{\prime}{10}^{m}\cdot 0^{s}$	3.8921	3.8922	3.8922	3.8923	3.8923	3.8924	3.8924	3.8925	3.8925	3.8926
10 10	3.8927	3.8927	3.8928	3.8928	3.8929	3.8929	3.8930	3.8930	3.8931	3.8932
10 20	3.8932	3.8933	3.8933	3.8934	3.8934	3.8935	3.8935	3.8936	3.8937	3.8937
10 30	3.8938	3.8938	3.8939	3.8939	3.8940	3.8940	3.8941	3.8941	3.8942	3.8943
10 40	3.8943	3.8944	3.8944	3.8945	3.8945	3.8946	3.8946	3.8947	3.8948	3.8948
10 50	3.8949	3.8949	3.8950	3.8950	3.8951	3.8951	3.8952	3.8953	3.8953	3.8954
2 11 0	3.8954	3.8955	3.8955	3.8956	3.8956	3.8957	3.8958	3.8958	3.8959	3.8959
11 10	3.8960	3.8960	3.8961	3.8961	3.8962	3.8963	3.8963	3.8964	3.8964	3.8965
11 20	3.8965	3.8966	3.8966	3.8967	3.8967	3.8968	3.8969	3.8969	3.8970	3.8970
11 30	3.8971	3.8971	3.8972	3.8972	3.8973	3.8974	3.8974	3.8975	3.8975	3.8976
11 40	3.8976	3.8977	3.8977	3.8978	3.8978	3.8979	3.8980	3.8980	3.8981	3.8981
11 50	3.8982	3.8982	3.8983	3.8983	3.8984	3.8985	3.8985	3.8986	3.8986	3.8987
2 12 0	3.8987	3.8988	3.8988	3.8989	3.8989	3.8990	3.8991	3.8991	3.8992	3.8992
12 10	3.8993	3.8993	3.8994	3.8994	3.8995	3.8995	3.8996	3.8997	3.8997	3.8998
12 20	3.8998	3.8999	3.8999	3.9000	3.9000	3.9001	3.9001	3.9002	3.9003	3.9003
12 30	3.9004	3.9004	3.9005	3.9005	3.9006	3.9006	3.9007	3.9007	3.9008	3.9009
12 40	3.9009	3.9010	3.9010	3.9011	3.9011	3.9012	3.9012	3.9013	3.9013	3.9014
12 50	3.9015	3.9015	3.9016	3.9016	3.9017	3.9017	3.9018	3.9018	3.9019	3.9019
2 13 0	3.9020	3.9021	3.9021	3.9022	3.9022	3.9023	3.9023	3.9024	3.9024	3.9025
13 10	3.9025	3.9026	3.9027	3.9027	3.9028	3.9028	3.9029	3.9029	3.9030	3.9030
13 20	3.9031	3.9031	3.9032	3.9033	3.9033	3.9034	3.9034	3.9035	3.9035	3.9036
13 30	3.9036	3.9037	3.9037	3.9038	3.9038	3.9039	3.9040	3 9040	3.9041	3.9041
13 40	3.9042	3.9042	3.9043	3.9043	3.9044	3.9044	3.9045	3.9046	3.9046	3.9047
13 50	3.9047	3.9048	3.9048	3.9049	3.9049	3.9050	3.9050	3.9051	3.9051	3.9052
2 14 0	3.9053	3.9053	3.9054	3.9054	3.9055	3.9055	3.9056	3.9056	3.9057	3.9057
14 10	3.9058	3.9058	3.9059	3.9060	3.9060	3.9061	3.9061	3.9062	3.9062	3.9063
14 20	3.9063	3.9064	3.9064	3.9065	3.9066	3.9066	3.9067	3.9067	3.9068	3.9068
14 30	3.9069	3.9069	3.9070	3.9070	3.9071	3.9071	3.9072	3.9073	3.9073	3.9074
14 40	3.9074	3.9075	3.9075	3.9076	3.9076	3.9077	3.9077	3.9078	3.9078	3.9079
14 50	3.9079	3.9080	3.9081	3.9081	3.9082	3.9082	3.9083	3.9083	3.9084	3.9084
2 15 0	3.9085	3.9085	3.9086	3.9086	3.9087	3.9088	3.9088	3.9089	3.9089	3.9090
15 10	3.9090	3.9091	3.9091	3.9092	3.9092	3.9093	3.9093	3.9094	3.9094	3.9095
15 20	3.9096	3.9096	3.9097	3.9097	3.9098	3.9098	3.9099	3.9099	3.9100	3.9100
15 30	3.9101	3.9101	3.9102	3.9103	3.9103	3.9104	3.9104	3.9105	3.9105	3.9106
15 40	3.9106	3.9107	3.9107	3.9108	3.9108	3.9109	3.9109	3.9110	3.9111	3.9111
15 50	3.9112	3.9112	3.9113	3.9113	3.9114	3.9114	3.9115	3.9115	3.9116	3.9116
2 16 0	3.9117	3.9117	3.9118	3.9118	3.9119	3.9120	3.9120	3.9121	3.9121	3.9122
16 10	3.9122	3.9123	3.9123	3.9124	3.9124	3.9125	3.9125	3.9126	3.9126	3.9127
16 20	3.9128	3.9128	3.9129	3.9129	3.9130	3.9130	3.9131	3.9131	3.9132	3.9132
16 30	3.9133	3.9133	3.9134	3.9134	3.9135	3.9135	3.9136	3.9137	3.9137	3.9138
16 40	3.9138	3.9139	3.9139	3.9140	3.9140	3.9141	3.9141	3.9142	3.9142	3.9143
16 50	3.9143	3.9144	3.9144	3.9145	3.9146	3.9146	3.9147	3.9147	3.9148	3.9148
2 17 0	3.9149	3.9149	3.9150	3.9150	3.9151	3.9151	3.9152	3.9152	3.9153	3.9153
17 10	3.9154	3.9155	3.9155	3.9156	3.9156	3.9157	3.9157	3.9158	3.9158	3.9159
17 20	3.9159	3.9160	3.9160	3.9161	3.9161	3.9162	3.9162	3.9163	3.9163	3.9164
17 30	3.9165	3.9165	3.9166	3.9166	3.9167	3.9167	3.9168	3.9168	3.9169	3.9169
17 40	3.9170	3.9170	3.9171	3.9171	3.9172	3.9172	3.9173	3.9173	3.9174	3.9175
17 50	3.9175	3.9176	3.9176	3.9177	3.9177	3.9178	3.9178	3.9179	3.9179	3.9180
2 18 0	3.9180	3.9181	3.9181	3.9182	3.9182	3.9183	3.9183	3.9184	3.9184	3.9185
18 10	3.9186	3.9186	3.9187	3.9187	3.9188	3.9188	3.9189	3.9189	3.9190	3.9190
18 20	3.9191	3.9191	3.9192	3.9192	3.9193	3.9193	3.9194	3.9194	3.9195	3.9195
18 30	3.9196	3.9197	3.9197	3.9198	3.9198	3.9199	3.9199	3.9200	3.9200	3.9201
18 40	3.9201	3.9202	3.9202	3.9203	3.9203	3.9204	3.9204	3.9205	3.9205	3.9206
18 50	3.9206	3.9207	3.9207	3.9208	3.9209	3.9209	3.9210	3.9210	3.9211	3.9211
2 19 0	3.9212	3.9212	3.9213	3.9213	3.9214	3.9214	3.9215	3.9215	3.9216	3.9216
19 10	3.9217	3.9217	3.9218	3.9218	3.9219	3.9219	3.9220	3.9221	3.9221	3.9222
19 20	3.9222	3.9223	3.9223	3.9224	3.9224	3.9225	3.9225	3.9226	3.9226	3.9227
19 30	3.9227	3.9228	3.9228	3.9229	3.9229	3.9230	3.9230	3.9231	3.9231	3.9232
19 40	3.9232	3.9233	3.9233	3.9234	3.9235	3.9235	3.9236	3.9236	3.9237	3.9237
19 50	3.9238	3.9238	3.9239	3.9239	3.9240	3.9240	3.9241	3.9241	3.9242	3.9242

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	$0''$	$1''$	$2''$	$3''$	$4''$	$5''$	$6''$	$7''$	$8''$	$9''$
$\overset{\circ}{2}{}^{h}\,\overset{\prime}{20}{}^{m}\,0^{s}$	3.9243	3.9243	3.9244	3.9244	3.9245	3.9245	3.9246	3.9246	3.9247	3.9247
20 10	3.9248	3.9248	3.9249	3.9250	3.9250	3.9251	3.9251	3.9252	3.9252	3.9253
20 20	3.9253	3.9254	3.9254	3.9255	3.9255	3.9256	3.9256	3.9257	3.9257	3.9258
20 30	3.9258	3.9259	3.9259	3.9260	3.9260	3.9261	3.9261	3.9262	3.9262	3.9263
20 40	3.9263	3.9264	3.9264	3.9265	3.9265	3.9266	3.9267	3.9267	3.9268	3.9268
20 50	3.9269	3.9269	3.9270	3.9270	3.9271	3.9271	3.9272	3.9272	3.9273	3.9273
2 21 0	3.9274	3.9274	3.9275	3.9275	3.9276	3.9276	3.9277	3.9277	3.9278	3.9278
21 10	3.9279	3.9279	3.9280	3.9280	3.9281	3.9281	3.9282	3.9282	3.9283	3.9283
21 20	3.9284	3.9284	3.9285	3.9285	3.9286	3.9287	3.9287	3.9288	3.9288	3.9289
21 30	3.9289	3.9290	3.9290	3.9291	3.9291	3.9292	3.9292	3.9293	3.9293	3.9294
21 40	3.9294	3.9295	3.9295	3.9296	3.9296	3.9297	3.9297	3.9298	3.9298	3.9299
21 50	3.9299	3.9300	3.9300	3.9301	3.9301	3.9302	3.9302	3.9303	3.9303	3.9304
2 22 0	3.9304	3.9305	3.9305	3.9306	3.9306	3.9307	3.9307	3.9308	3.9308	3.9309
22 10	3.9309	3.9310	3.9311	3.9311	3.9312	3.9312	3.9313	3.9313	3.9314	3.9314
22 20	3.9315	3.9315	3.9316	3.9316	3.9317	3.9317	3.9318	3.9318	3.9319	3.9319
22 30	3.9320	3.9320	3.9321	3.9321	3.9322	3.9322	3.9323	3.9323	3.9324	3.9324
22 40	3.9325	3.9325	3.9326	3.9326	3.9327	3.9327	3.9328	3.9328	3.9329	3.9329
22 50	3.9330	3.9330	3.9331	3.9331	3.9332	3.9332	3.9333	3.9333	3.9334	3.9334
2 23 0	3.9335	3.9335	3.9336	3.9336	3.9337	3.9337	3.9338	3.9338	3.9339	3.9339
23 10	3.9340	3.9340	3.9341	3.9341	3.9342	3.9342	3.9343	3.9343	3.9344	3.9344
23 20	3.9345	3.9345	3.9346	3.9346	3.9347	3.9348	3.9348	3.9349	3.9349	3.9350
23 30	3.9350	3.9351	3.9351	3.9352	3.9352	3.9353	3.9353	3 9354	3.9354	3.9355
23 40	3.9355	3.9356	3.9356	3.9357	3.9357	3.9358	3.9358	3.9359	3.9359	3.9360
23 50	3.9360	3.9361	3.9361	3.9362	3.9362	3.9363	3.9363	3.9364	3.9364	3.9365
2 24 0	3.9365	3.9366	3.9366	3.9367	3.9367	3.9368	3.9368	3.9369	3.9369	3.9370
24 10	3.9370	3.9371	3.9371	3.9372	3.9372	3.9373	3.9373	3.9374	3.9374	3.9375
24 20	3.9375	3.9376	3.9376	3.9377	3.9377	3.9378	3.9378	3.9379	3.9379	3.9380
24 30	3.9380	3.9381	3.9381	3.9382	3.9382	3.9383	3.9383	3.9384	3.9384	3.9385
24 40	3.9385	3.9386	3.9386	3.9387	3.9387	3.9388	3.9388	3.9389	3.9389	3.9390
24 50	3.9390	3.9391	3.9391	3.9392	3.9392	3 9393	3.9393	3.9394	3.9394	3.9395
2 25 0	3.9395	3.9396	3.9396	3.9397	3.9397	3.9398	3.9398	3.9399	3.9399	3.9400
25 10	3.9400	3.9401	3.9401	3.9402	3.9402	3.9403	3.9403	3.9404	3.9404	3.9405
25 20	3.9405	3.9406	3.9406	3.9407	3.9407	3.9408	3.9408	3.9409	3.9409	3.9410
25 30	3.9410	3.9411	3.9411	3.9412	3.9412	3.9413	3.9413	3.9414	3.9414	3.9415
25 40	3.9415	3.9416	3.9416	3.9417	3.9417	3.9418	3.9418	3.9419	3.9419	3.9420
25 50	3.9420	3.9421	3.9421	3.9422	3.9422	3.9423	3.9423	3.9424	3.9424	3.9425
2 26 0	3.9425	3.9426	3.9426	3.9427	3.9427	3.9428	3.9428	3.9429	3.9429	3.9430
26 10	3.9430	3.9430	3.9431	3.9431	3.9432	3.9432	3.9433	3.9433	3.9434	3.9434
26 20	3.9435	3.9435	3.9436	3.9436	3.9437	3.9437	3.9438	3.9438	3.9439	3.9439
26 30	3.9440	3.9440	3.9441	3.9441	3.9442	3.9442	3.9443	3.9443	3.9444	3.9444
26 40	3.9445	3.9445	3.9446	3.9446	3.9447	3.9447	3.9448	3.9448	3.9449	3.9449
26 50	3.9450	3.9450	3.9451	3.9451	3.9452	3.9452	3.9453	3.9453	3.9454	3.9454
2 27 0	3.9455	3.9455	3.9456	3.9456	3.9457	3.9457	3.9458	3.9458	3.9459	3.9459
27 10	3.9460	3.9460	3.9461	3.9461	3.9462	3.9462	3.9463	3.9463	3.9464	3.9464
27 20	3.9465	3.9465	3.9466	3.9466	3.9466	3.9467	3.9467	3.9468	3.9468	3.9469
27 30	3.9469	3.9470	3.9470	3.9471	3.9471	3.9472	3.9472	3.9473	3.9473	3.9474
27 40	3.9474	3.9475	3.9475	3.9476	3.9476	3.9477	3.9477	3.9478	3.9478	3.9479
27 50	3.9479	3.9480	3.9480	3.9481	3.9481	3.9482	3.9482	3.9483	3.9483	3.9484
2 28 0	3.9484	3.9485	3.9485	3.9486	3.9486	3.9487	3.9487	3.9488	3.9488	3.9489
28 10	3.9489	3.9490	3.9490	3.9490	3.9491	8.9491	3.9492	3.9492	3.9493	3.9493
28 20	3.9494	3.9494	3.9495	3.9495	3.9496	3.9496	3.9497	3.9497	3.9498	3.9498
28 30	3.9499	3.9499	3.9500	3.9500	3.9501	3.9501	3.9502	3.9502	3.9503	3.9503
28 40	3.9504	3.9504	3.9505	3.9505	3.9506	3.9506	3.9507	3.9507	3.9508	3.9508
28 50	3.9509	3.9509	3.9509	3.9510	3.9510	3.9511	3.9511	3.9512	3.9512	3.9513
2 29 0	3.9513	3.9514	3.9514	3.9515	3.9515	3.9516	3.9516	3.9517	3.9517	3.9518
29 10	3.9518	3.9519	3.9519	3.9520	3.9520	3.9521	3.9521	3.9522	3.9522	3.9523
29 20	3.9523	3.9524	3.9524	3.9525	3.9525	3.9526	3.9526	3.9526	3.9527	3.9527
29 30	3.9528	3.9528	3.9529	3.9529	3.9530	3.9530	3.9531	3.9531	3.9532	3.9532
29 40	3.9533	3.9533	3.9534	3.9534	3.9535	3.9535	3.9536	3.9536	3.9537	3.9537
29 50	3.9538	3.9538	3.9539	3.9539	3.9540	3.9540	3.9540	3.9541	3.9541	3.9542

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.	0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
$\overset{\circ}{2}{}^{h}\,\overset{\prime}{30}{}^{m}\,\overset{\prime\prime}{0}{}^{s}$	3.9542	3.9543	3.9543	3.9544	3.9544	3.9545	3.9545	3.9546	3.9546	3.9547
30 10	3.9547	3.9548	3.9548	3.9549	3.9549	3.9550	3.9550	3.9551	3.9551	3.9552
30 20	3.9552	3.9553	3.9553	3.9554	3.9554	3.9554	3.9555	3.9555	3.9556	3.9556
30 30	3.9557	3.9557	3.9558	3.9558	3.9559	3.9559	3.9560	3.9560	3.9561	3.9561
30 40	3.9562	3.9562	3.9563	3.9563	3.9564	3.9564	3.9565	3.9565	3.9566	3.9566
30 50	3.9566	3.9567	3.9567	3.9568	3.9568	3.9569	3.9569	3.9570	3.9570	3.9571
2 31 0	3.9571	3.9572	3.9572	3.9573	3.9573	3.9574	3.9574	3.9575	3.9575	3.9576
31 10	3.9576	3.9577	3.9577	3.9578	3.9578	3.9578	3.9579	3.9579	3.9580	3.9580
31 20	3.9581	3.9581	3.9582	3.9582	3.9583	3.9583	3.9584	3.9584	3.9585	3.9585
31 30	3.9586	3.9586	3.9587	3.9587	3.9588	3.9588	3.9589	3.9589	3.9589	3.9590
31 40	3.9590	3.9591	3.9591	3.9592	3.9592	3.9593	3.9593	3.9594	3.9594	3.9595
31 50	3.9595	3.9596	3.9596	3.9697	3.9597	3.9598	3.9598	3.9599	3.9599	3.9599
2 32 0	3.9600	3.9600	3.9601	3.9601	3.9602	3.9602	3.9603	3.9603	3.9604	3.9604
32 10	3.9605	3.9605	3.9606	3.9606	3.9607	3.9607	3.9608	3.9608	3.9609	3.9609
32 20	3.9609	3.9610	3.9610	3.9611	3.9611	3.9612	3.9612	3.9613	3.9613	3.9614
32 30	3.9614	3.9615	3.9615	3.9616	3.9616	3.9617	3.9617	3.9618	3.9618	3.9618
32 40	3.9619	3.9619	3.9620	3.9620	3.9621	3.9621	3.9622	3.9622	3.9623	3.9623
32 50	3.9624	3.9624	3.9625	3.9625	3.9626	3.9626	3.9627	3.9627	3.9627	3.9628
2 33 0	3.9628	3.9629	3.9629	3.9630	3.9630	3.9631	3.9631	3.9632	3.9632	3.9633
33 10	3.9633	3.9634	3.9634	3.9634	3.9635	3.9635	3.9636	3.9636	3.9637	3.9637
33 20	3.9638	3.9638	3.9639	3.9639	3.9640	3.9640	3.9641	3.9641	3.9642	3.9642
33 30	3.9642	3.9643	3.9643	3.9644	3.9644	3.9645	3.9645	3.9646	3.9646	3.9647
33 40	3.9647	3.9648	3.9648	3.9649	3.9649	3.9650	3.9650	3.9651	3.9651	3.9652
33 50	3.9652	3.9653	3.9653	3.9653	3.9654	3.9654	3.9655	3.9655	3.9656	3.9656
2 34 0	3.9657	3.9657	3.9658	3.9658	3.9658	3.9659	3.9659	3.9660	3.9660	3.9661
34 10	3.9661	3.9662	3.9662	3.9663	3.9663	3.9664	3.9664	3.9665	3.9665	3.9665
34 20	3.9666	3.9666	3.9667	3.9667	3.9668	3.9668	3.9669	3.9669	3.9670	3.9670
34 30	3.9671	3.9671	3.9672	3.9672	3.9672	3.9673	3.9673	3.9674	3.9674	3.9675
34 40	3.9675	3.9676	3.9676	3.9677	3.9677	3.9678	3.9678	3.9679	3.9679	3.9680
34 50	3.9680	3.9681	3.9681	3.9682	3.9682	3.9682	3.9683	3.9683	3.9684	3.9684
2 35 0	3.9685	3.9685	3.9686	3.9686	3.9687	3.9687	3.9688	3.9688	3.9689	3.9689
35 10	3.9689	3.9690	3.9690	3.9691	3.9691	3.9692	3.9692	3.9693	3.9693	3.9694
35 20	3.9694	3.9695	3.9695	3.9696	3.9696	3.9696	3.9697	3.9697	3.9698	3.9698
35 30	3.9699	3.9699	3.9700	3.9700	3.9701	3.9701	3.9702	3.9702	3.9703	3.9703
35 40	3.9703	3.9704	3.9704	3.9705	3.9705	3.9706	3.9706	3.9707	3.9707	3.9708
35 50	3.9708	3.9709	3.9709	3.9710	3.9710	3.9710	3.9711	3.9711	3.9712	3.9712
2 36 0	3.9713	3.9713	3.9714	3.9714	3.9715	3.9715	3.9716	3.9716	3.9716	3.9717
36 10	3.9717	3.9718	3.9718	3.9719	3.9719	3.9720	3.9720	3.9721	3.9721	3.9722
36 20	3.9722	3.9722	3.9723	3.9723	3.9724	3.9724	3.9725	3.9725	3.9726	3.9726
36 30	3.9727	3.9727	3.9728	3.9728	3.9729	3.9729	3.9729	3.9730	3.9730	3.9731
36 40	3.9731	3.9732	3.9732	3.9733	3.9733	3.9734	3.9734	3.9735	3.9735	3.9735
36 50	3.9736	3.9736	3.9737	3.9737	3.9738	3.9738	3.9739	3.9739	3.9740	3.9740
2 37 0	3.9741	3.9741	3.9741	3.9742	3.9742	3.9743	3.9743	3.9744	3.9744	3.9745
37 10	3.9745	3.9746	3.9746	3.9746	3.9747	3.9747	3.9748	3.9748	3.9749	3.9749
37 20	3.9750	3.9750	3.9751	3.9751	3.9752	3.9752	3.9752	3.9753	3.9753	3.9754
37 30	3.9754	3.9755	3.9755	3.9756	3.9756	3.9757	3.9757	3.9758	3.9758	3.9758
37 40	3.9759	3.9759	3.9760	3.9760	3.9761	3.9761	3.9762	3.9762	3.9763	3.9763
37 50	3.9763	3.9764	3.9764	3.9765	3.9765	3.9766	3.9766	3.9767	3.9767	3.9768
2 38 0	3.9768	3.9769	3.9769	3.9769	3.9770	3.9770	3.9771	3.9771	3.9772	3.9772
38 10	3.9773	3.9773	3.9774	3.9774	3.9774	3.9775	3.9775	3.9776	3.9776	3.9777
38 20	3.9777	3.9778	3.9778	3.9779	3.9779	3.9779	3.9780	3.9780	3.9781	3.9781
38 30	3.9782	3.9782	3.9783	3.9783	3.9784	3.9784	3.9785	3.9785	3.9785	3.9786
38 40	3.9786	3.9787	3.9787	3.9788	3.9788	3.9789	3.9889	3.9790	3.9790	3.9790
38 50	3.9791	3.9791	3.9792	3.9792	3.9793	3.9793	3.9794	3.9794	3.9795	3.9795
2 39 0	3.9795	3.9796	3.9796	3.9797	3.9797	3.9798	3.9798	3.9799	3.9799	3.9800
39 10	3.9800	3.9800	3.9801	3.9801	3.9802	3.9802	3.9803	3.9803	3.9804	3.9804
39 20	3.9805	3.9805	3.9805	3.9806	3.9806	3.9807	3.9807	3.9808	3.9808	3.9809
39 30	3.9809	3.9810	3.9810	3.9810	3.9811	3.9811	3.9812	3.9812	3.9813	3.9813
39 40	3.9814	3.9814	3.9815	3.9815	3.9815	3.9816	3.9816	3.9817	3.9817	3.9818
39 50	3.9818	3.9819	3.9819	3.9819	3.9820	3.9820	3.9821	3.9821	3.9822	3.9822

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			$0''$	$1''$	$2''$	$3''$	$4''$	$5''$	$6''$	$7''$	$8''$	$9''$
$\overset{\circ}{2}{}^{h}$	$\overset{\prime}{40}{}^{m}$	$\overset{\prime\prime}{0}{}^{s}$	3.9823	3.9823	3.9824	3.9824	3.9825	3.9825	3.9825	3.9826	3.9826	3.9827
	40	10	3.9827	3.9828	3.9828	3.9829	3.9829	3.9829	3.9830	3.9830	3.9831	3.9831
	40	20	3.9832	3.9832	3.9833	3.9833	3.9834	3.9834	3.9834	3.9835	3.9835	3.9836
	40	30	3.9836	3.9837	3.9837	3.9838	3.9838	3.9839	3.9839	3.9839	3.9840	3.9840
	40	40	3.9841	3.9841	3.9842	3.9842	3.9843	3.9843	3.9843	3.9844	3.9844	3.9845
	40	50	3.9845	3.9846	3.9846	3.9847	3.9847	3.9848	3.9848	3.9848	3.9849	3.9849
2	41	0	3.9850	3.9850	3.9851	3.9851	3.9852	3.9852	3.9852	3.9853	3.9853	3.9854
	41	10	3.9854	3.9855	3.9855	3.9856	3.9856	3.9857	3.9857	3.9857	3.9858	3.9858
	41	20	3.9859	3.9859	3.9860	3.9860	3.9861	3.9861	3.9861	3.9862	3.9862	3.9863
	41	30	3.9863	3.9864	3.9864	3.9865	3.9865	3.9865	3.9866	3.9866	3.9867	3.9867
	41	40	3.9868	3.9868	3.9869	3.9869	3.9870	3.9870	3.9870	3.9871	3.9871	3.9872
	41	50	3.9872	3.9873	3.9873	3.9874	3.9874	3.9874	3.9875	3.9875	3.9876	3.9876
2	42	0	3.9877	3.9877	3.9878	3.9878	3.9878	3.9879	3.9879	3.9880	3.9880	3.9881
	42	10	3.9881	3.9882	3.9882	3.9882	3.9883	3.9883	3.9884	3.9884	3.9885	3.9885
	42	20	3.9886	3.9886	3.9886	3.9887	3.9887	3.9888	3.9888	3.9889	3.9889	3.9890
	42	30	3.9890	3.9890	3.9891	3.9891	3.9892	3.9892	3.9893	3.9893	3.9894	3.9894
	42	40	3.9894	3.9895	3.9895	3.9896	3.9896	3.9897	3.9897	3.9898	3.9898	3.9898
	42	50	3.9899	3.9899	3.9900	3.9900	3.9901	3.9901	3.9902	3.9902	3.9903	3.9903
2	43	0	3.9903	3.9904	3.9904	3.9905	3.9905	3.9906	3.9906	3.9906	3.9907	3.9907
	43	10	3.9908	3.9908	3.9909	3.9909	3.9910	3.9910	3.9910	3.9911	3.9911	3.9912
	43	20	3.9912	3.9913	3.9913	3.9914	3.9914	3.9914	3.9915	3.9915	3.9916	3.9916
	43	30	3.9917	3.9917	3.9918	3.9918	3.9918	3.9919	3.9919	3.9920	3.9920	3.9921
	43	40	3.9921	3.9922	3.9922	3.9922	3.9923	3.9923	3.9924	3.9924	3.9925	3.9925
	43	50	3.9926	3.9926	3.9926	3.9927	3.9927	3.9928	3.9928	3.9929	3.9929	3.9930
2	44	0	3.9930	3.9930	3.9931	3.9931	3.9932	3.9932	3.9933	3.9933	3.9933	3.9934
	44	10	3.9934	3.9935	3.9935	3.9936	3.9936	3.9937	3.9937	3.9937	3.9938	3.9938
	44	20	3.9939	3.9939	3.9940	3.9940	3.9941	3.9941	3.9941	3.9942	3.9942	3.9943
	44	30	3.9943	3.9944	3.9944	3.9944	3.9945	3.9945	3.9946	3.9946	3.9947	3.9947
	44	40	3.9948	3.9948	3.9948	3.9949	3.9949	3.9950	3.9950	3.9951	3.9951	3.9952
	44	50	3.9952	3.9952	3.9953	3.9953	3.9954	3.9954	3.9955	3.9955	3.9955	3.9956
2	45	0	3.9956	3.9957	3.9957	3.9958	3.9958	3.9959	3.9959	3.9959	3.9960	3.9960
	45	10	3.9961	3.9961	3.9962	3.9962	3.9962	3.9963	3.9963	3.9964	3.9964	3.9965
	45	20	3.9965	3.9966	3.9966	3.9966	3.9967	3.9967	3.9968	3.9968	3.9969	3.9969
	45	30	3.9969	3.9970	3.9970	3.9971	3.9971	3.9972	3.9972	3.9973	3.9973	3.9973
	45	40	3.9974	3.9974	3.9975	3.9975	3.9976	3.9976	3.9976	3.9977	3.9977	3.9978
	45	50	3.9978	3.9979	3.9979	3.9980	3.9980	3.9980	3.9981	3.9981	3.9982	3.9982
2	46	0	3.9983	3.9983	3.9983	3.9984	3.9984	3.9985	3.9985	3.9986	3.9986	3.9987
	46	10	3.9987	3.9987	3.9988	3.9988	3.9989	3.9989	3.9990	3.9990	3.9990	3.9991
	46	20	3.9991	3.9992	3.9992	3.9993	3.9993	3.9993	3.9994	3.9994	3.9995	3.9995
	46	30	3.9996	3.9996	3.9997	3.9997	3.9997	3.9998	3.9998	3.9999	3.9999	4.0000
	46	40	4.0000	4.0000	4.0001	4.0001	4.0002	4.0002	4.0003	4.0003	4.0003	4.0004
	46	50	4.0004	4.0005	4.0005	4.0006	4.0006	4.0007	4.0007	4.0007	4.0008	4.0008
2	47	0	4.0009	4.0009	4.0010	4.0010	4.0010	4.0011	4.0011	4.0012	4.0012	4.0013
	47	10	4.0013	4.0013	4.0014	4.0014	4.0015	4.0015	4.0016	4.0016	4.0016	4.0017
	47	20	4.0017	4.0018	4.0018	4.0019	4.0019	4.0019	4.0020	4.0020	4.0021	4.0021
	47	30	4.0022	4.0022	4.0023	4.0023	4.0023	4.0024	4.0024	4.0025	4.0025	4.0026
	47	40	4.0026	4.0026	4.0027	4.0027	4.0028	4.0028	4.0029	4.0029	4.0029	4.0030
	47	50	4.0030	4.0031	4.0031	4.0032	4.0032	4.0032	4.0033	4.0033	4.0034	4.0034
2	48	0	4.0035	4.0035	4.0035	4.0036	4.0036	4.0037	4.0037	4.0038	4.0038	4.0038
	48	10	4.0039	4.0039	4.0040	4.0040	4.0041	4.0041	4.0041	4.0042	4.0042	4.0043
	48	20	4.0043	4.0044	4.0044	4.0045	4.0045	4.0045	4.0046	4.0046	4.0047	4.0047
	48	30	4.0048	4.0048	4.0048	4.0049	4.0049	4.0050	4.0050	4.0051	4.0051	4.0051
	48	40	4.0052	4.0052	4.0053	4.0053	4.0054	4.0054	4.0054	4.0055	4.0055	4.0056
	48	50	4.0056	4.0057	4.0057	4.0057	4.0058	4.0058	4.0059	4.0059	4.0060	4.0060
2	49	0	4.0060	4.0061	4.0061	4.0062	4.0062	4.0063	4.0063	4.0063	4.0064	4.0064
	49	10	4.0065	4.0065	4.0066	4.0066	4.0066	4.0067	4.0067	4.0068	4.0068	4.0069
	49	20	4.0069	4.0069	4.0070	4.0070	4.0071	4.0071	4.0072	4.0072	4.0072	4.0073
	49	30	4.0073	4.0074	4.0074	4.0074	4.0075	4.0075	4.0076	4.0076	4.0077	4.0077
	49	40	4.0077	4.0078	4.0078	4.0079	4.0079	4.0080	4.0080	4.0080	4.0081	4.0081
	49	50	4.0082	4.0082	4.0083	4.0083	4.0083	4.0084	4.0084	4.0085	4.0085	4.0086

TABLE IX.

LOGARITHMS OF SMALL ARCS IN SPACE OR TIME.

Arc.			0″	1″	2″	3″	4″	5″	6″	7″	8″	9″
°	′	″										
2h.	50m.	0s.	4.0086	4.0086	4.0087	4.0087	4.0088	4.0088	4.0089	4.0089	4.0089	4.0090
	50	10	4.0090	4.0091	4.0091	4.0092	4.0092	4.0092	4.0093	4.0093	4.0094	4.0094
	50	20	4.0095	4.0095	4.0095	4.0096	4.0096	4.0097	4.0097	4.0097	4.0098	4.0098
	50	30	4.0099	4.0099	4.0100	4.0100	4.0100	4.0101	4.0101	4.0102	4.0102	4.0103
	50	40	4.0103	4.0103	4.0104	4.0104	4.0105	4.0105	4.0106	4.0106	4.0106	4.0107
	50	50	4.0107	4.0108	4.0108	4.0109	4.0109	4.0109	4.0110	4.0110	4.0111	4.0111
2	51	0	4.0111	4.0112	4.0112	4.0113	4.0113	4.0114	4.0114	4.0114	4.0115	4.0115
	51	10	4.0116	4.0116	4.0117	4.0117	4.0117	4.0118	4.0118	4.0119	4.0119	4.0120
	51	20	4.0120	4.0120	4.0121	4.0121	4.0122	4.0122	4.0122	4.0123	4.0123	4.0124
	51	30	4.0124	4.0125	4.0125	4.0125	4.0126	4.0126	4.0127	4.0127	4.0128	4.0128
	51	40	4.0128	4.0129	4.0129	4.0130	4.0130	4.0130	4.0131	4.0131	4.0132	4.0132
	51	50	4.0133	4.0133	4.0133	4.0134	4.0134	4.0135	4.0135	4.0136	4.0136	4.0136
2	52	0	4.0137	4.0137	4.0138	4.0138	4.0138	4.0139	4.0139	4.0140	4.0140	4.0141
	52	10	4.0141	4.0141	4.0142	4.0142	4.0143	4.0143	4.0144	4.0144	4.0144	4.0145
	52	20	4.0145	4.0146	4.0146	4.0146	4.0147	4.0147	4.0148	4.0148	4.0149	4.0149
	52	30	4.0149	4.0150	4.0150	4.0151	4.0151	4.0152	4.0152	4.0153	4.0153	4.0153
	52	40	4.0154	4.0154	4.0154	4.0155	4.0155	4.0156	4.0156	4.0157	4.0157	4.0157
	52	50	4.0158	4.0158	4.0159	4.0159	4.0159	4.0160	4.0160	4.0161	4.0161	4.0162
2	53	0	4.0162	4.0162	4.0163	4.0163	4.0164	4.0164	4.0164	4.0165	4.0165	4.0166
	53	10	4.0166	4.0167	4.0167	4.0167	4.0168	4.0168	4.0169	4.0169	4.0169	4.0170
	53	20	4.0170	4.0171	4.0171	4.0172	4.0172	4.0172	4.0173	4.0173	4.0174	4.0174
	53	30	4.0175	4.0175	4.0175	4.0176	4.0176	4.0177	4.0177	4.0177	4.0178	4.0178
	53	40	4.0179	4.0179	4.0180	4.0180	4.0180	4.0181	4.0181	4.0182	4.0182	4.0182
	53	50	4.0183	4.0183	4.0184	4.0184	4.0185	4.0185	4.0185	4.0186	4.0186	4.0187
2	54	0	4.0187	4.0187	4.0188	4.0188	4.0189	4.0189	4.0190	4.0190	4.0190	4.0191
	54	10	4.0191	4.0192	4.0192	4.0192	4.0193	4.0193	4.0194	4.0194	4.0194	4.0195
	54	20	4.0195	4.0196	4.0196	4.0197	4.0197	4.0197	4.0198	4.0198	4.0199	4.0199
	54	30	4.0199	4.0200	4.0200	4.0201	4.0201	4.0202	4.0202	4.0202	4.0203	4.0203
	54	40	4.0204	4.0204	4.0204	4.0205	4.0205	4.0206	4.0206	4.0207	4.0207	4.0207
	54	50	4.0208	4.0208	4.0209	4.0209	4.0209	4.0210	4.0210	4.0211	4.0211	4.0211
2	55	0	4.0212	4.0212	4.0213	4.0213	4.0214	4.0214	4.0214	4.0215	4.0215	4.0216
	55	10	4.0216	4.0216	4.0217	4.0217	4.0218	4.0218	4.0219	4.0219	4.0219	4.0220
	55	20	4.0220	4.0221	4.0221	4.0221	4.0222	4.0222	4.0223	4.0223	4.0223	4.0224
	55	30	4.0224	4.0225	4.0225	4.0225	4.0226	4.0226	4.0227	4.0227	4.0228	4.0228
	55	40	4.0228	4.0229	4.0229	4.0230	4.0230	4.0230	4.0231	4.0231	4.0232	4.0232
	55	50	4.0233	4.0233	4.0233	4.0234	4.0234	4.0235	4.0235	4.0235	4.0236	4.0236
2	56	0	4.0237	4.0237	4.0237	4.0238	4.0238	4.0239	4.0239	4.0240	4.0240	4.0240
	56	10	4.0241	4.0241	4.0242	4.0242	4.0242	4.0243	4.0243	4.0244	4.0244	4.0244
	56	20	4.0245	4.0245	4.0246	4.0246	4.0246	4.0247	4.0247	4.0248	4.0248	4.0249
	56	30	4.0249	4.0249	4.0250	4.0250	4.0251	4.0251	4.0251	4.0252	4.0252	4.0253
	56	40	4.0253	4.0253	4.0254	4.0254	4.0255	4.0255	4.0256	4.0256	4.0256	4.0257
	56	50	4.0257	4.0258	4.0258	4.0258	4.0259	4.0259	4.0260	4.0260	4.0260	4.0261
2	57	0	4.0261	4.0262	4.0262	4.0262	4.0263	4.0263	4.0264	4.0264	4.0265	4.0265
	57	10	4.0265	4.0266	4.0266	4.0267	4.0267	4.0267	4.0268	4.0268	4.0269	4.0269
	57	20	4.0269	4.0270	4.0270	4.0271	4.0271	4.0271	4.0272	4.0272	4.0273	4.0273
	57	30	4.0273	4.0274	4.0274	4.0275	4.0275	4.0276	4.0276	4.0276	4.0277	4.0277
	57	40	4.0278	4.0278	4.0278	4.0279	4.0279	4.0280	4.0280	4.0280	4.0281	4.0281
	57	50	4.0282	4.0282	4.0282	4.0283	4.0283	4.0284	4.0284	4.0284	4.0285	4.0285
2	58	0	4.0286	4.0286	4.0287	4.0287	4.0287	4.0288	4.0288	4.0289	4.0289	4.0289
	58	10	4.0290	4.0290	4.0291	4.0291	4.0291	4.0292	4.0292	4.0293	4.0293	4.0293
	58	20	4.0294	4.0294	4.0295	4.0295	4.0295	4.0296	4.0296	4.0297	4.0297	4.0297
	58	30	4.0298	4.0298	4.0299	4.0299	4.0300	4.0300	4.0300	4.0301	4.0301	4.0302
	58	40	4.0302	4.0302	4.0303	4.0303	4.0304	4.0304	4.0304	4.0305	4.0305	4.0306
	58	50	4.0306	4.0306	4.0307	4.0307	4.0308	4.0308	4.0308	4.0309	4.0309	4.0310
2	59	0	4.0310	4.0310	4.0311	4.0311	4.0312	4.0312	4.0312	4.0313	4.0313	4.0314
	59	10	4.0314	4.0314	4.0315	4.0315	4.0316	4.0316	4.0317	4.0317	4.0317	4.0318
	59	20	4.0318	4.0319	4.0319	4.0319	4.0320	4.0320	4.0321	4.0321	4.0321	4.0322
	59	30	4.0322	4.0323	4.0323	4.0323	4.0324	4.0324	4.0325	4.0325	4.0325	4.0326
	59	40	4.0326	4.0327	4.0327	4.0327	4.0328	4.0328	4.0329	4.0329	4.0329	4.0330
	59	50	4.0330	4.0331	4.0331	4.0331	4.0332	4.0332	4.0333	4.0333	4.0333	4.0334

TABLE X.

TABLE, SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h. m.	h. m.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

		Difference of the Proportional Logarithms in the Ephemeris.																								
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102
h. m.	h. m.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	13
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	18
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32

		Difference of the Proportional Logarithms in the Ephemeris.																	
		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h. m.	h. m.	s.	s.	s.	s.	s.	s.	s	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

TABLE XI.

LOG. *N* FOR DISTANCES FROM THE SUN.

1857.	$0^{h.}$	$3^{h.}$	$6^{h.}$	$9^{h.}$	$12^{h.}$	$15^{h.}$	$18^{h.}$	$21^{h.}$
Jan. 1	—0.93	0.93	0.94	0.94	0.95	0.95	0.95	0.96
2	0.96	.96	.96	.96	.97	.96	.96	.96
3	0.96	.96	.95	.94	.94	.93	.93	.92
4	0.91	.90	.89	.88	.87	.86	.84	.83
5	0.81	.80	.78	.76	.74	.71	.68	.65
6	—0.62	.58	.54	.49	.44	.38	.30	.20
14	0.90	.90	.90	.91	.91	.91	.92	.92
15	0.92	.92	.92	.93	.93	.93	.93	.93
16	0.93	.93	.92	.92	.92	.92	.91	.91
17	0.91	.90	.90	.89	.89	.88	.87	.87
18	—0.86	.85	.84	.83	.82	.81	.80	.79
19	0.78	.76	.74	.73	.71	.69	.67	.65
20	—0.63	0.60	.58	.55	.51	.48	.44	.39
22	+9.43	9.80	0.00	.13	.24	.32	.40	.46
28	—0.87	0.89	.90	.91	.92	.93	.93	.94
29	—0.95	.95	.96	.96	.96	.97	.97	.97
30	0.96	.96	.96	.96	.96	.95	.95	.94
31	0.94	.93	.93	.92	.91	.90	.89	.88
Feb. 1	0.87	.86	.84	.83	.81	.79	.77	.75
2	0.74	.72	.69	.67	.64	.61	.57	0.54
3	—0.50	.45	.40	.33	.26	.18	.05	9.89
12	0.93	.93	.93	.93	.93	.93	.93	0.93
13	0.93	.92	.92	.92	.91	.91	.90	.90
14	0.89	.88	.88	.87	.86	.85	.85	.84
15	0.84	.83	.82	.81	.80	.79	.78	.77
16	—0.76	.74	.73	.71	.70	.68	.66	.64
17	—0.62	0.59	.56	.53	.48	.42	.37	.31
19	+9.73	9.93	0.06	.17	.25	.32	.39	.45
20	0.49	0.53	.57	.61	.64	.67	.70	.73
21	+0.76	.79	.81	.83	.86	.88	.90	.92
26	—0.97	.97	.98	.98	.98	.98	.98	.97
27	0.97	.97	.96	.96	.96	.95	.94	.93
28	0.93	.92	.91	.89	.88	.87	.85	.84
Mar. 1	0.82	.81	.79	.77	.75	.72	.70	.67
2	0.65	.62	.58	.54	0.51	0.46	0.41	0.35
3	—0.29	0.21	.12	.00	9.83	9.53	8.00	
4	+9.81	9.99	0.11	.20	0.28	0.35	0.40	0.46
5	0.50	0.54	.58	.61	.64	.67	.70	.72
6	+0.74	.76	.78	.80	.82	.84	.85	.87
14	—0.90	.89	.88	.87	.86	.85	.84	.83
15	—0.82	.81	.79	.78	.77	.75	.73	.72
16	0.70	.68	.66	.64	.62	.59	.56	.53
17	—0.50	.46	.42	.38	.33	.28	.21	.13
19	+0.06	.15	.23	.30	.36	.41	.46	.50
20	0.54	.57	.61	.63	.66	.69	.71	.74
21	+0.76	.78	.80	.81	.83	.85	.87	.88
22	0.90	0.91	0.93	0 95	0.96	0.97	0.98	0.99
23	+1.00	1.01	1.01	1.02	1.03	1.03	1.04	1.04
27	—1.01	1.00	0.99	0.99	0.98	0.97	0.95	0.94
28	0.93	0.91	.90	.88	.87	.85	.83	.81
29	—0.77	.74	.71	.68	.65	.63	.60	.58
30	—0.56	0.52	0.47	0.41	0.35	0.27	0.20	0.10
Apr. 1	—0.22	0.30	0.36	0.41	0.47	0.51	0.54	0.58
2	0.61	.63	.66	.68	.71	.73	.74	.76
3	0.78	.79	.81	.82	.83	.84	.85	.87
4	0.88	.89	.90	.91	.91	.92	.93	.94
13	0.67	.65	.62	.59	.56	.53	0.50	0.45
14	—0.41	.36	.31	.25	.17	.08	9.97	9.82
16	+0.27	.33	.38	.43	.47	.51	0.54	0.58
17	0.61	.64	.66	.69	.71	.73	.75	.77
18	0.79	.80	.82	.83	.85	.86	.87	.89
19	+0.90	.91	.92	.93	.94	.95	.95	.96
20	—0.97	.97	.98	.98	.99	.99	.99	.99
21	1.00	.99	.99	.99	.99	.99	.98	.98
26	0.81	.77	.74	.70	.67	.63	0.58	0.53
27	—0.48	.44	.36	.28	.18	.06	9.90	9.65
29	+0.41	.45	.49	.53	.57	.60	0.63	0.66
May 1	+0.82	.83	.84	.85	.86	.87	.88	.89
2	0.89	.90	.91	.91	.92	.92	.93	.93
3	0.94	.94	.94	.94	.95	.95	.95	.95
4	0.95	0.95	0.95	.94	.94	.94	.93	.93
13	9.42	9.76	9.94	0.07	.17	.25	.31	.37
14	+0.42	0.47	0.51	.55	.58	.61	.64	.66
15	0.68	.70	.72	.74	.76	.78	.80	.81
16	0.83	.84	.85	.87	.88	.89	.90	.91
17	0.91	.92	.93	.94	.94	.95	.95	.96
18	0.96	.97	.97	.97	.97	.98	.98	.98
19	+0.98	.97	.97	.97	.96	.96	.95	.95
20	0.94	0.93	.92	.91	.90	.88	.87	.85
26	9.44	9.83	0.03	.16	.26	.34	.41	.46
27	0.51	0.55	.58	.61	.65	.67	.70	.72
28	0.74	.75	.77	.79	.80	.82	.83	.84
29	+0.85	.86	.87	.88	.89	.89	.90	.91
30	0.91	.91	.91	.91	.91	.91	.91	.91
31	0.91	.91	.91	.92	.92	.93	.93	.93
June 1	0.93	.93	.93	.92	.92	.92	.92	.91
2	0.90	.90	.89	.89	.88	.87	.86	.85
11	+0.52	.56	.59	.63	.66	.68	.70	.72
12	0.75	.76	.78	.80	.82	.83	.84	.85
13	0.87	.88	.89	.90	.90	.91	.92	.93
14	0.93	.94	.94	.95	.95	.96	.96	.96
15	0.97	.96	.96	.96	.96	.96	.96	.96
16	+0.96	.95	.95	.94	.94	.93	.92	.92
17	0.91	.90	.89	.87	.86	.85	.83	.81
18	0.79	.77	.75	.72	.69	.66	.62	.57
24	0.53	.58	.61	.65	.68	.71	.73	.75
25	0.77	.79	.80	.82	.83	.84	.85	.86
26	+0.87	.88	.89	.90	.91	.91	.92	.92
27	0.92	.92	.93	.93	.93	.93	.93	.94
28	0.94	.94	.93	.93	.93	.93	.93	.93
29	0.92	.92	.92	.91	.91	.90	.90	.89
30	0.88	.87	.87	.86	.85	.85	.84	.83
July 1	+0.82	.81	.79	.78	.76	.75	.73	.71
2	+0.69	0.67	0.65	0.62	0.60	0.57	0.54	0.50

TABLE XI.

LOG. *N* FOR DISTANCES FROM THE SUN.

1857.	$0^{h.}$	$3^{h.}$	$6^{h.}$	$9^{h.}$	$12^{h.}$	$15^{h.}$	$18^{h.}$	$21^{h.}$	1857.	$0^{h.}$	$3^{h.}$	$6^{h.}$	$9^{h.}$	$12^{h.}$	$15^{h.}$	$18^{h.}$	$21^{h.}$
July 10	+0.80	0.82	0.83	0.85	0.86	0.87	0.88	0.90	Oct. 7	+0.69	0.66	0.63	0.58	0.54	0.50	0.44	0.38
11	0.91	.91	.92	.93	.94	.94	.94	.95	9	—9.88	0.04	.15	.24	.31	.37	.42	.47
12	0.95	.96	.96	.96	.96	.96	.96	.96	10	0.51	.55	.58	.61	.64	.67	.69	.72
13	0.96	.96	.96	.96	.95	.95	.95	.94	11	0.74	.75	.77	.79	.80	.82	.83	.84
14	0.94	.93	.92	.91	.91	.90	.88	.87	12	0.86	.87	.87	.88	.89	.90	.91	.91
15	+0.86	.85	.83	.82	.80	.78	.77	.75	13	—0.92	.93	.93	.94	.94	.95	.95	.95
16	+0.73	.70	.67	.64	.61	.57	.53	.48	14	—0.95	.96	.96	.96	.95	.95	.95	.94
18	—9.75	0.01	.17	.29	.39	.47	.55	.61	20	+0.87	.86	.84	.82	.81	.78	.76	.74
23	+0.78	.80	.82	.84	.85	.86	.87	.88	21	0.72	.69	.67	.64	.61	.58	.55	.52
24	0.89	.90	.90	.91	.92	.92	.93	.93	22	+0.48	.43	.38	.33	.28	.21	.13	.03
25	+0.93	.94	.94	.94	.94	.94	.94	.94	24	—0.31	.35	.38	.41	.44	.47	.49	.52
26	0.94	.94	.93	.93	.93	.93	.93	.92	25	0.55	.57	.60	.62	.65	.67	.69	.72
27	0.92	.92	.91	.91	.90	.89	.88	.88	26	0.74	.74	.78	.80	.81	.83	.84	.85
28	0.87	.86	.85	.84	.83	.82	.80	.79	27	0.86	.87	.88	.89	.90	.91	.91	.92
29	0.78	.76	.75	.73	.72	.70	.69	.67	28	0.93	.93	.94	.94	.95	.95	.96	.96
30	+0.65	.63	.60	.57	.55	.52	0.48	0.44	29	—0.97	.97	.97	.97	.97	.97	.97	.96
31	0.40	.35	.30	.23	.16	.07	9.95	9.75	Nov. 6	0.24	.31	.38	.43	.48	.52	.56	.59
Aug. 9	0.97	.97	.97	.97	.97	.97	0.97	0.96	7	0.63	.65	.67	.70	.72	.74	.76	.78
10	0.96	.95	.95	.94	.94	.93	.92	.92	8	0.79	.81	.82	.83	.85	.86	.87	.88
11	0.91	.90	.89	.88	.87	.86	.84	.83	9	0.88	.89	.90	.90	.91	.91	.92	.92
12	+0.81	.79	.77	.75	.73	.71	.69	.66	10	—0.93	.93	.93	.93	.94	.94	.94	.94
13	+0.63	.60	.56	.52	.48	.42	.36	.29	11	0.94	.94	.94	.93	.93	.93	.93	.92
15	—0.08	.20	.29	.36	.43	.48	.53	.58	12	0.92	.91	.91	.90	.90	.89	.88	.87
16	—0.62	.66	.69	.72	.75	.78	.81	.83	13	—0.86	.85	.83	.82	.80	.78	.76	.74
21	+0.91	.91	.92	.93	.94	.94	.94	.95	18	+0.80	.77	.73	.70	.66	.62	0.58	0.53
22	+0.95	.95	.96	.96	.96	.96	.96	.95	19	+0.48	.43	.36	.29	.21	.11	9.98	9.80
23	0.95	.95	.94	.94	.94	.93	.92	.92	21	—0.32	.37	.42	.47	.51	.55	0.58	0.61
24	0.91	.91	.90	.89	.89	.88	.87	.86	22	0.64	.66	.68	.70	.72	.74	.75	.77
25	0.85	.84	.83	.82	.81	.79	.78	.77	23	0.79	.80	.81	.83	.84	.85	.86	.87
26	0.74	.72	.71	.70	.69	.67	.65	.63	24	0.88	.89	.90	.91	.91	.92	.93	.93
27	+0.61	0.59	0.56	.52	.49	.45	.40	.34	25	—0.94	.94	.95	.95	.95	.96	.96	.96
29	—9.24	9.65	9.86	0.00	.11	.17	.25	.31	26	0.96	.96	.96	.96	.96	.96	.95	.95
30	—0.38	0.43	0.48	.52	.56	.59	.62	.65	27	0.95	.94	.93	.93	.92	.91	.90	.89
Sept. 7	+0.97	.96	.95	.94	.93	.92	.91	.90	Dec. 4	0.33	.40	.47	.52	.56	.60	.64	.67
8	0.89	.87	.85	.84	.83	.81	.79	.77	5	0.70	.72	.74	.76	.78	.79	.81	.83
9	+0.75	.72	.70	.67	.64	.61	.57	0.53	6	—0.84	.85	.86	.87	.88	.89	.90	.91
10	+0.49	.44	.39	.33	.26	.18	.07	9.93	7	0.92	.92	.92	.93	.93	.93	.93	.93
12	—0.35	.41	.46	.50	.55	.59	.62	0.65	8	0.94	.94	.94	.94	.94	.94	.94	.94
13	0.67	.70	.72	.74	.77	.78	.80	.82	9	0.94	.93	.93	.93	.92	.92	.92	.91
14	0.84	.85	.86	.87	.88	.89	.90	.91	10	0.91	.90	.90	.89	.88	.88	.87	.86
15	—0.92	.93	.94	.95	.96	.97	.98	.99	11	—0.85	.84	.83	.82	.80	.78	.77	.75
20	+0.98	.97	.97	.96	.96	.95	.94	.93	12	0.74	.71	.69	.66	.63	.61	.58	.55
21	0.93	.92	.91	.90	.89	.88	.87	.86	13	0.52	.49	.46	.42	.38	.34	.30	.26
22	0.84	.83	.82	.80	.79	.77	.76	.74	19	0.40	.46	.51	.55	.59	.62	.65	.67
23	0.73	.71	.69	.67	.64	.62	.59	.57	20	0.70	.73	.75	.77	.79	.80	.81	.82
24	+0.54	.51	.47	.43	.39	.34	.28	.21	21	—0.83	.85	.86	.87	.88	.89	.90	.91
26	—9.97	0.07	.16	.23	.29	.34	.39	.43	22	0.91	.92	.92	.93	.94	.94	.95	.95
27	0.47	.50	.54	.57	.60	.63	.66	.68	23	0.95	.95	.96	.96	.96	.96	.96	.96
28	0.70	.72	.74	.76	.78	.80	.81	.83	24	0.96	.95	.95	.95	.95	.94	.94	.93
29	—0.85	.86	.87	.88	.90	.91	.92	.93	25	0.93	.92	.91	.91	.90	.88	.88	.86
Oct. 6	+0.88	0.86	0.84	0.82	0.80	0.78	0.75	0.72	26	—0.85	0.84	0.82	0.80	0.78	0.76	0.74	0.72

TABLE XII.

For finding the value of *N* for correcting lunar distances for the compression of the earth.

TABLE XII. *A.* giving 1st Part of *N.*

App. Dist.	☽'s Declination.										
	0°	3°	6°	9°	12°	15°	18°	21°	24°	27°	30°
20°	−0″	3″	6″	10″	13″	16″	19″	22″	25″	28″	31″
22	0	3	6	9	12	14	17	20	23	25	28
24	0	3	5	8	11	13	16	18	21	23	25
26	0	2	5	7	10	12	14	17	19	21	23
28	0	2	4	7	9	11	13	15	17	19	21
30	−0	2	4	6	8	10	12	14	16	18	20
32	0	2	4	6	8	9	11	13	15	16	18
34	0	2	4	5	7	9	10	12	14	15	17
36	0	2	3	5	7	8	10	11	13	14	16
38	0	2	3	5	6	8	9	10	12	13	14
40	−0	1	3	4	6	7	8	10	11	12	13
42	0	1	3	4	5	7	8	9	10	11	13
44	0	1	2	4	5	6	7	8	10	11	12
46	0	1	2	3	5	6	7	8	9	10	11
48	0	1	2	3	4	5	6	7	8	9	10
50	−0	1	2	3	4	5	6	7	8	9	10
52	0	1	2	3	4	5	5	6	7	8	9
54	0	1	2	3	3	4	5	6	7	7	8
56	0	1	2	2	3	4	5	5	6	7	8
58	0	1	1	2	3	4	4	5	6	6	7
60	−0	1	1	2	3	3	4	5	5	6	7
62	0	1	1	2	3	3	4	4	5	5	6
64	0	1	1	2	2	3	3	4	4	5	6
66	0	1	1	2	2	3	3	4	4	5	5
68	0	0	1	1	2	2	3	3	4	4	5
70	−0	0	1	1	2	2	3	3	3	4	4
72	0	0	1	1	2	2	2	3	3	3	4
74	0	0	1	1	1	2	2	2	3	3	3
76	0	0	1	1	1	1	2	2	2	3	3
78	0	0	0	1	1	1	1	2	2	2	2
80	−0	0	0	1	1	1	1	1	2	2	2
82	0	0	0	0	1	1	1	1	1	1	2
84	0	0	0	0	0	1	1	1	1	1	1
86	0	0	0	0	0	0	0	1	1	1	1
88	0	0	0	0	0	0	0	0	0	0	0
90	−0	0	0	0	0	0	0	0	0	0	0
92	+0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	1	1	1	1
96	0	0	0	0	0	1	1	1	1	1	1
98	0	0	0	0	1	1	1	1	1	1	2
100	+0	0	0	1	1	1	1	1	2	2	2
102	0	0	0	1	1	1	1	2	2	2	2
104	0	0	1	1	1	1	2	2	2	3	3
106	0	0	1	1	1	2	2	2	3	3	3
108	0	0	1	1	2	2	2	3	3	3	4
110	+0	0	1	1	2	2	3	3	3	4	4
112	0	0	1	1	2	2	3	3	4	4	5
114	0	1	1	2	2	3	3	4	4	5	5
116	0	1	1	2	2	3	3	4	4	5	6
118	0	1	1	2	3	3	4	4	5	5	6
120	+0	1	1	2	3	3	4	5	5	6	7
122	0	1	1	2	3	4	4	5	6	6	7
124	0	1	2	2	3	4	5	5	6	7	8
126	0	1	2	3	3	4	5	6	7	7	8
128	0	1	2	3	4	5	5	6	7	8	9
130	+0	1	2	3	4	5	6	7	8	9	10

TABLE XII. *B.* giving 2d Part of *N.*

App. Dist.	✱'s Declination.										
	0°	3°	6°	9°	12°	15°	18°	21°	24°	27°	30°
20°	+0″	3″	7″	10″	14″	17″	20″	24″	27″	30″	33″
22	0	3	6	9	13	16	19	22	25	27	30
24	0	3	6	9	12	14	17	20	23	25	28
26	0	3	5	8	11	13	16	18	21	23	26
28	0	3	5	8	10	12	15	17	20	22	24
30	+0	2	5	7	9	12	14	16	18	21	23
32	0	2	4	7	9	11	13	15	17	19	21
34	0	2	4	6	8	11	13	15	16	18	20
36	0	2	4	6	8	10	12	14	16	17	19
38	0	2	4	6	8	10	11	13	15	17	18
40	+0	2	4	6	7	9	11	13	14	16	18
42	0	2	4	5	7	9	10	12	14	15	17
44	0	2	3	5	7	8	10	12	13	15	16
46	0	2	3	5	6	8	10	11	13	14	16
48	0	2	3	5	6	8	9	11	12	14	15
50	+0	2	3	5	6	8	9	11	12	13	15
52	0	2	3	4	6	7	9	10	12	13	14
54	0	1	3	4	6	7	9	10	11	13	14
56	0	1	3	4	6	7	8	10	11	12	14
58	0	1	3	4	6	7	8	10	11	12	13
60	+0	1	3	4	5	7	8	9	11	12	13
62	0	1	3	4	5	7	8	9	10	12	13
64	0	1	3	4	5	7	8	9	10	11	13
66	0	1	3	4	5	6	8	9	10	11	12
68	0	1	3	4	5	6	8	9	10	11	12
70	+0	1	3	4	5	6	7	9	10	11	12
72	0	1	2	4	5	6	7	9	10	11	12
74	0	1	2	4	5	6	7	8	10	11	12
76	0	1	2	4	5	6	7	8	9	11	12
78	0	1	2	4	5	6	7	8	9	11	12
80	+0	1	2	4	5	6	7	8	9	10	11
82	0	1	2	4	5	6	7	8	9	10	11
84	0	1	2	4	5	6	7	8	9	10	11
86	0	1	2	4	5	6	7	8	9	10	11
88	0	1	2	4	5	6	7	8	9	10	11
90	+0	1	2	4	5	6	7	8	9	10	11
92	0	1	2	4	5	6	7	8	9	10	11
94	0	1	2	4	5	6	7	8	9	10	11
96	0	1	2	4	5	6	7	8	9	10	11
98	0	1	2	4	5	6	7	8	9	10	11
100	+0	1	2	4	5	6	7	8	9	10	11
102	0	1	2	4	5	6	7	8	9	11	12
104	0	1	2	4	5	6	7	8	9	11	12
106	0	1	2	4	5	6	7	8	10	11	12
108	0	1	2	4	5	6	7	9	10	11	12
110	+0	1	3	4	5	6	7	9	10	11	12
112	0	1	3	4	5	6	8	9	10	11	12
114	0	1	3	4	5	6	8	9	10	11	12
116	0	1	3	4	5	7	8	9	10	11	13
118	0	1	3	4	5	7	8	9	10	12	13
120	+0	1	3	4	5	7	8	9	11	12	13
122	0	1	3	4	6	7	8	10	11	12	13
124	0	1	3	4	6	7	8	10	11	12	14
126	0	1	3	4	6	7	9	10	11	13	14
128	0	2	3	4	6	7	9	10	12	13	14
130	+0	2	3	5	6	8	9	11	12	13	15

The signs in the 0° column apply to all the numbers in the same line, and are to be used when the declination is *North*. When the declination is *South*, change the sign + to — and — to +.

IMPROVED METHOD

OF FINDING THE

ERROR AND RATE OF A CHRONOMETER

BY EQUAL ALTITUDES.

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METHOD

OF FINDING THE

ERROR AND RATE OF A CHRONOMETER BY EQUAL ALTITUDES.

To regulate a chronometer to Greenwich time, we must determine its error and rate at a place whose longitude is well known. The most accurate method of doing this is by observing the transit of the sun or a star over the meridian. For the navigator, the most simple and accurate substitute for the meridian observation is that of equal altitudes of the same object on each side of the meridian. In the case of a star, the mean of the two chronometer times corresponding to the equal altitudes is the chronometer time of transit; but in the case of the sun, the mean of these times differs somewhat from the time of transit, since, in consequence of the change of the sun's declination between the observations, the equal altitudes do not occur at equal intervals before and after the transit.

The small correction necessary, when the sun is observed, to reduce the mean of the times to the time of transit, is called the *Equation of Equal Altitudes.*

The method of computing this equation given below is based upon that first given by GAUSS (*Monatliche Correspondenz*, Vol. XXIII.). We do not, however, follow him in using the double daily change of declination, or difference between the sun's declination on the noon preceding and the noon following that of the observation; but prefer to use the hourly difference, because this may be obtained directly from the American Ephemeris, and is at the same time even more accurate. We also extend our table so as to meet the case where one altitude is taken in the afternoon and the corresponding equal altitude on the following morning; in which case, the equation is computed for apparent midnight.*

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* It should be observed, as a caution to navigators, that the rule for computing the equation for midnight is sometimes inaccurately, or incompletely, stated in works on navigation or astronomy. The rule in Lieut. RAPER'S *Practice of Navigation* is wholly erroneous. GALBRAITH'S rule (*Mathematical and Astronomical Tables*) is incomplete, in not noticing the case where the elapsed time is less than $12^{h.}$. His rule for computing the equation for noon is similarly defective, in not noticing the case where the elapsed time is greater than $12^{h.}$. In Professor INMAN'S rule there is a slight inaccuracy introduced, by taking the equation of time for mean, instead of apparent noon or midnight; and in all the books,

EQUAL ALTITUDES.

I. EQUAL ALTITUDES OF THE SUN, MORNING AND EVENING.

The Observation.

On shore, at a place whose longitude is *accurately* known, and whose latitude is *approximately* known, observe with an artificial horizon the same altitude both in the morning and in the afternoon, as near the prime vertical as convenient after the altitude is more than 10°, noting the times by the chronometer. In low latitudes, however, the method of equal altitudes will often give very accurate results, even when the observations are quite near to the meridian. In general, a sufficiently accurate result may be obtained if the observations are taken when the sun's change of altitude is not less than 10″ in $0^m.5$, or when the change in the double altitude taken with the artificial horizon is not less than 20″ in $0^m.5$.

It is most convenient, as well as conducive to accuracy, to take the observation in the following manner. In the morning, bring the lower limb of the sun, reflected from the sextant-mirrors, and the upper limb of that reflected from the mercury, into approximate contact; move the 0 of the vernier forward (say from 10′ to 20′), and set it on a division of the limb; the images will be *overlapped* and will be *separating*; wait for the instant of contact; note it by chronometer, and immediately set the vernier on the next division of the limb, that is, 10′ in advance; note the instant of contact again, and proceed in the same manner for as many observations as are thought necessary. If the sun rises too rapidly, let the intervals on the limb be 20′. Find (roughly) the time when the sun will be at the same altitude in the afternoon, and just before that time set the vernier on the last altitude noted in the morning (of course using the same sextant); the images of the sun will be *separated*, but will be *approaching;* wait for the instant of contact; note it by chronometer; set the vernier *back* to the next division of the limb (10′ or 20′, as the case may be); note the contact again, and so proceed till all the A. M. altitudes have been again noted as P. M. altitudes.

The Computation.

Take the mean of the A. M. times and call it the *A. M. Chronometer Time.* The mean of the P. M. times call the *P. M. Chronometer Time.* If, instead of noting the times by the chronometer, a watch is used (compared with the chronometer both before and after each observation), it will generally be found necessary to make an allowance for its gain or loss on the chronometer, so as to obtain the exact difference between the watch and chronometer at the instant of observation. This difference being applied to the mean of the watch times, we have the mean chronometer time the same as would have been found by employing the chronometer directly.

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the methods given of taking out the sun's change of declination, whether for 48^h or for 24^h, are not as accurate as they should be.

A perfectly accurate rule, with a special table, for the midnight correction, is given in Schumacher's *Hülfstafeln* (Ed. by Warnstorff). It requires, however, one logarithm more than our method in the text, and is otherwise not so simple.

EQUAL ALTITUDES.

The half sum of the A. M. and P. M. Chronometer Times is the ***Middle Chronometer Time***, their difference is the ***Elapsed Time;*** observing that when the A. M. time is before 12h. by chronometer, while the P. M. time is after 12h., the latter must be supposed to be increased by 12h. in finding this half sum and difference.

Take from the Nautical Almanac the sun's declination, the hourly difference of declination, and the equation of time, reducing each to the instant of local apparent noon by applying the changes for the longitude.

Mark *north* latitude and *north* declination +

" *south* latitude and *south* declination —

" hourly diff. of decl. when *towards north* +

" hourly diff. of decl. when *towards south* —.

Enter Table I. with the elapsed time, and take out log. A and log. B, prefixing to each its proper sign given in the table at the head of the page.

To log. A add the log. of the hourly diff., Table II., and the log. tangent of the latitude (Bowditch, Table XXVII.). Prefix to each log. the sign of the quantity it represents and to their sum the sign which results from the algebraic combination of the three signs.* This sum is the log. (Table II.) of the number of seconds of time in the *first part* of equation of equal altitudes, to be marked + or — like its log.

To log. B. add the log. of the hourly diff. and the log. tangent of the declination, marking the signs as before. The sum is the log. of the *second part* of the equation of equal altitudes, to be marked + or — like its log.

Apply the two parts of the equation, according to their signs, to the Middle Chronometer Time; the result is the *Chronometer Time of Apparent Noon.*

To this apply the equation of time (adding, when the equation of time is additive to mean time, otherwise subtracting); the result is the *Chronometer Time of Mean Noon*, which, if the chronometer is regulated to local time, will be 12h. 0m. 0s. when the chronometer is right; more than 12h. when fast, less than 12h. when slow.

If the chronometer is regulated to Greenwich time, apply the longitude (in time) to the chronometer time of mean noon (subtracting in west, adding in east); the result will be more or less than 12h., according as the chronometer is fast or slow.

Repeat this process on a subsequent day. The difference between the chronometer errors on the two days, divided by the number of days in the interval, is the ***daily rate*** of the chronometer, ***gaining*** or ***losing*** according as the chronometer goes too fast or too slow.

EXAMPLE 1.

May 3d, 1856. At the United States Naval Academy, Lat. 38° 59′ N., Long. 5h. 5m. 55s..1 W., suppose the following observations of equal altitudes to be taken with an artificial horizon. Required the error of the chronometer on Greenwich time at noon of that day?

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* The algebraic rule being, that, when there is an *odd* number of factors with the sign minus, the result must have the sign minus, otherwise the sign plus. In the present application of this rule, when there is either *one* or *three* of the logs. marked —, their sum must be marked —; otherwise +.

EQUAL ALTITUDES.

A. M.

Comparisons.

	h.	m.	s.
Chronom.	12	52	0.0
Watch	7	45	8.0
Diff.	5	6	52.0
Chronom.	1	20	0.0
Watch	8	13	9.5
Diff.	5	6	50.5

Watch A. M.

	h.	m.	s.
	8	2	9.
	8	2	35.5
	8	3	0.5
Mean	8	2	35.0
Comparison	5	6	51.1
A. M. Chro. Time	1	9	26.1
P. M. Chro. Time	8	58	11.7
2)	10	7	37.8
Middle Chro. T.	5	3	48.9
Equat. of Eq. Alts.			—8.8
Chro. T. App. N.	5	3	40.1
Equat. of Time		+3	19.4
Chro. T. Mean N.	5	6	59.5
Longitude	5	5	55.1 W.
Chro. *fast*		1	4.4

A. M., watch gains $1^{s}.5$ in $28^{m.}$

Interval to obs. $17^{m}.5$

$28^{m.} : 17^{m}.5 = 1^{s}.5 : 0^{s}.9$

P. M., watch gains $2^{s}.2$ in $34^{m.}$

Interval to obs. $21^{m.}$

$34^{m.} : 21^{m.} = 2^{s}.2 : 1^{s}.4$

2 ⨀ Art. Hor.

°	′
65	50
66	0
66	10

	m.	s.	s.
(Eq. T.)	—3	18.11	0.258
		1.32	5.1
Eq. T.	—3	19.43	1.32

	°	′	″		″
(D.)	+15	48	50.5	(H. D.)	+43.82
		3	42.8		—0.14
D.	+15	52	33.3	H. D.	+43.68
					5.1
					222.8

log. A. Tab. I.	—9.4846
H.D. +43″.68 log. Tab. II.	+1.6403
Lat. + 38° 59′ log. tan.	+9.9081
1st Pt. Eq. $—10^{s}.79$ log.	—1.0330

log. B. Tab. I.	+9.2011
. . . .	+1.6403
D. + 15° 53′ log. tan.	+9.4542
2d Pt. Eq. $+1^{s}.98$ log.	+0.2956

P. M.

Comparisons.

	h.	m.	s.
Chronom.	8	37	0.0
Watch	3	30	31.3
Diff.	5	6	28.7
Chronom.	9	11	0.0
Watch	4	4	33.5
Diff.	5	6	26.5

Watch P. M.

	h.	m.	s.
	3	52	10.7
	3	51	44.0
	3	51	18.5
Mean	3	51	44.4
Comparison	5	6	27.3
P. M. Chro. Time	8	58	11.7
A. M. Chro. Time	1	9	26.1
Elapsed Time	7	48	45.6

Decrease in $24.0^{h.} = 0''.66$

Decrease in $5.1 = 0.14$

By similar observations on May 15th, suppose the chronometer is found to be fast $12^{s}.5$; we have

	m.	s.
May 3d, fast	1	4.4
May 15th, fast		12.5
Loses in 12 days		51.9
Daily rate		4.33 losing.

II. EQUAL ALTITUDES OF THE SUN, EVENING AND MORNING.

THE OBSERVATION.

Take a set of altitudes, in the manner already explained, in the afternoon of one day, and the same altitudes in reverse order on the morning of the next, noting the times by the chronometer, or by a watch compared with it.

THE COMPUTATION.

The half sum of the P. M. and A. M. Chronometer Times is the *Middle Chronometer Time;* their difference is the *Elapsed Time;* observing that when the P. M. time is before $12^{h.}$ by chronometer, while the A. M. time is after $12^{h.}$, the latter must be supposed to be increased by $12^{h.}$ in finding this half sum and this difference.

Take from the Nautical Almanac the sun's declination, the hourly difference of declination, and the equation of time, reducing them each to the instant of local *apparent midnight.*

EQUAL ALTITUDES.

Mark the sign of each quantity as before, and compute the two parts of the equation of equal altitudes precisely as in the preceding case, observing to mark the signs of log. A and log. B as given in the table for midnight.

Apply the two parts of the equation to the middle chronometer time, according to their signs; the result is the *Chronometer Time of Apparent Midnight.*

To this apply the equation of time (adding, when the equation of time is additive to mean time, otherwise subtracting); the result is the *Chronometer Time of Mean Midnight*, which, if the chronometer is regulated to local time, will be $12^{\text{h.}}\ 0^{\text{m.}}\ 0^{\text{s.}}$ when the chronometer is right; more than $12^{\text{h.}}$ when fast; less than $12^{\text{h.}}$ when slow.

If the chronometer is regulated to Greenwich time, apply the longitude, in time, to the chronometer time of mean midnight (subtracting in west, adding in east); the result will be more or less than $12^{\text{h.}}$ (or $24^{\text{h.}}$) according as the chronometer is fast or slow.

A repetition of this process at a subsequent day will give another error, whence the rate will be found as before. Or the rate may be found by comparing the results of an A. M. — P. M., and a P. M. — A. M. observation, remembering that the interval elapsed between two such observations is equal to the difference between the two dates *plus* or *minus* half a day.

EXAMPLE 2.

May 3d, 1856, Lat. 43° 21′ S., Long. $9^{\text{h.}}\ 50^{\text{m.}}\ 8^{\text{s.}}$ E., suppose the altitude of the sun to be observed in the afternoon and the same altitude again on the morning of the 4th, as below. Required the error of the chronometer on Greenwich time at midnight of the 3d?

Chronom., P. M.	2 $\underline{\odot}$ Art. Hor.	Chronom., A. M.
$6^{\text{h.}}\ 54^{\text{m.}}\ 10^{\text{s.}}.3$	38° 0′	$9^{\text{h.}}\ 9^{\text{m.}}\ 17^{\text{s.}}.5$

The A. M. time must be called $21^{\text{h.}}\ 9^{\text{m.}}\ 17^{\text{s.}}.5$. The Greenwich time of midnight, for which the declination, &c. must be found, is May $3^{\text{d.}}\ 2^{\text{h.}}\ 9^{\text{m.}}\ 52^{\text{s.}}$ (= $3^{\text{d.}}\ 2^{\text{h.}}.16$.).

	h.	m.	s.	
P. M. Chro. T.	6	54	10.3	
A. M. Chro. T.	21	9	17.5	
	2)28	3	27.8	
Middle Chro. T.	14	1	43.9	
Eq. of Eq. Alts.			—22.3	
Chro.T.App.Midn.	14	1	21.6	
Eq. of Time		+3	18.7	
Chro.T.M'n Midn.	14	4	40.3	
Longitude	9	50	8.0	E.
	23	54	48.3	
	24	0	0.0	
Chronom. *slow*		5	11.7	

	m.	s.	s.
(Eq. T.)	—3	18.11	0.258
		0.56	2.15
Eq. T.	—3	18.67	0.56

	h.	m.	s.
A. M. Chro. T.	21	9	17.5
P. M. Chro. T.	6	54	10.3
Elapsed T.	14	15	7.2

	°	′	″		″
(D.)	+15	48	50.5	(H. D.)	+43.82
		1	34.1		—0.06
D.	+15	50	24.6	H. D.	+43.76
					2.15
					94.1

	h.		″
Decrease in	24.0	=	0.66
Decrease in	2.16	=	0.06

log.A.Tab.I.	+9.6958	log. B. Tab. I.	—9.1586
H.D.+43″.76 log. Tab. II.	+1.6411	. . . .	+1.6411
Lat. —43° 21′ log. tan.	—9.9750	D. + 15° 50′ log. tan.	+9.4527
1st Pt. Eq. —$20^{\text{s.}}.51$ log.	—1.3119	2dPt.Eq. — $1^{\text{s.}}.79$ log.	—0.2524

By an A. M. — P. M. observation on May 20th, suppose this chronometer is found to be slow $8^{\text{m.}}\ 14^{\text{s.}}.6$; we have

	d.	h.		m.	s.	
May	3	12	slow	5	11.7	
May	20	0	slow	8	14.6	
Loses in $16^{\text{d.}}.5$				3	2.9	
Daily rate					11.09	losing.

EQUAL ALTITUDES.

III. EQUAL ALTITUDES OF A FIXED STAR.

The Observation.

In selecting stars for this observation, it is to be observed that the nearer the zenith the star passes, the less may the elapsed time be; and when the star passes exactly through the zenith, the two altitudes may be taken within a few minutes of each other. But with the ordinary sextants, altitudes near 90° cannot be taken with the artificial horizon, as the double altitude is then nearly 180°. The prismatic sextants, or still better, the prismatic circles of Pistor and Martin, are adapted for measuring angles of all magnitudes up to 180°, and are therefore especially suitable for this observation.

Set the sextant and wait for the coincidences of the two images of the star, as in the case of the sun's limb, noting the times by chronometer or watch.

The Computation.

Take the mean of the times before the meridian passage as the *A. M. Chronometer Time*, and the mean of those after the meridian passage as the *P. M. Chronometer Time.*

The mean of the A. M. and P. M. Chronometer Times is the *Chronometer Time of Star's Transit.* This time, if the chronometer is right, will agree with the true mean time of star's transit, which is to be computed as follows.

To the right ascension of the star apply the longitude of the place of observation (adding in west, subtracting in east); the result is the *Greenwich Sidereal Time of Star's Transit*, from which subtract the sidereal time at the *preceding* mean noon Greenwich (Nautical Almanac, page II. of the month); the remainder is the *Sidereal Interval* since mean noon. From Table IV. with the argument *Sidereal Interval*, take out the correction, which subtract from the sidereal interval; the remainder is the Greenwich Mean Time of the Star's Transit. The chronometer time will be more or less than this according as the chronometer is fast or slow.

If the chronometer is regulated to local time, apply the longitude to the Greenwich mean time of star's transit (subtracting in west, adding in east); the result is the *Local Mean Time of Star's Transit*, and the chronometer is fast or slow according as it shows more or less than this time.

Example 3.

July 15th, 1856, at the Cape of Good Hope, Lat. 33° 56′ S., Long. $1^{h.}$ $13^{m.}$ $56^{s.}$ E., observed equal altitudes of *Antares* as follows: —

Chronom. A. M. h. m. s.	2 Alt. Antares. ° ′	Chronom. P. M h. m. s.
5 32 10.5	125 30	9 34 20.3
5 32 35.0	40	9 33 56.0
5 32 59.3	50	9 33 32.0

	h.	m.	s.
A. M. Chro. T.	5	32	34.9
P. M. Chro. T.	9	33	56.1
2)	15	6	31.0
Chro. T. * Transit	7	33	15.5
Gr. T. * Transit	7	31	22.1
Chro. fast		1	53.4

	h.	m.	s.
P. M. Chro. T.	9	33	56.1
Antares R. A.	16	20	37.58
Longitude	1	13	56.00 E.
Gr. Sid. T.	15	6	41.58
July 15, Gr. Sid. T. Mean Noon	7	34	5.25
Sid. Interval	7	32	36.33
Correction, Table IV.		—1	14.15
Gr. M. T. * Transit	7	31	22.18

IV. TO CORRECT FOR SMALL INEQUALITIES IN THE ALTITUDES.

Although the sextant readings are the same at the A. M. and P. M. observations, it may happen that neither the true nor even the apparent altitudes are the same. 1st. Supposing the sextant to remain unchanged, the atmospheric refraction may be different at the two observations in consequence of changes in the density and temperature of the air as shown by the barometer and thermometer. In this case, the apparent altitudes are equal, but the true altitudes are not so. 2d. The sextant may be affected by changes of temperature, particularly in day observations in the sun, so as to make the sextant readings the same for apparent altitudes slightly different. I do not think these changes in the sextant are to be eliminated by determining the index error at each observation, as has been supposed by some, since it is quite possible that the expansion and contraction of the various parts might leave the index correction unchanged while it affected the readings of the altitudes, or the reverse. The only course appears to be to guard the instrument as much as possible from changes of temperature, exposing it to the sun's rays only during the few minutes required for each observation.

But the correction for changes of refraction may be satisfactorily made as follows. Note the barometer and thermometer both A. M. and P. M.; take out the corresponding refractions for each observation from Tables III., III. A., and III. B., and find the difference of these refractions. Also take the difference between any two sextant readings and the difference between the two corresponding chronometer times. Then the correction of either noon or midnight will be found by the following proportion. The difference of the sextant readings is to the difference of the refractions as the difference of the chronometer times is to the required correction.

Apply this correction to the Chronometer Time of Noon or Midnight (obtained by the preceding rules) as follows: *add* it when the A. M. refraction is the greater; *subtract* it when the P. M. refraction is the greater. The result is the true Chronometer Time of Noon or Midnight.

Example. — Suppose, in Example 1, we have in the morning, Barometer 30 inches, Thermometer 55°; in the afternoon, Barometer 29.5 inches, Thermometer 85°. The apparent altitude of sun's lower limb 33° 0′; the apparent altitude of sun's centre 33° 16′. We have

EQUAL ALTITUDES.

A. M.	′ ″	P. M.	′ ″
Mean refraction	1 29	Mean refraction	1 29
Barom. 30 in.	0	Barom. 29.5 in.	—1
Therm. 55°	—1	Therm. 85°	—6
True refraction	1 28	True refraction	1 22

Then the difference of the sextant readings is 10′ (=600″) and the corresponding diff. of chronometer times is about 26ˢ· ; whence

$$\overset{''}{600} : \overset{''}{6} = \overset{s.}{26} : \overset{s.}{0.26}$$

	h. m. s.
The (approximate) Chronometer Time of Mean Noon was found to be	5 6 59.5
Correction for change of refraction	+0.3
True Chronometer Time of Mean Noon	5 6 59.8

Note. — This correction may be found by the following rule, which we should have to resort to when but one altitude was taken at each observation. Add together the log. of the diff. of refractions (Tab. II.), log. cosine of the altitude, log. secant of the latitude, log. secant of the declination, log. cosecant of half elapsed time (or if the elapsed time is greater than 12ʰ·, half its supplement to 24ʰ·), and the constant log. 8.523; the sum is the log. (Table II.) of the required correction. Thus in the preceding example we have

Diff. refr.	6″	log.	0.778
Alt. ⊙	33° 16′	log. cos.	9.922
Lat.	38° 59′	log. sec.	0.109
Dec.	15° 53′	log. sec.	0.017
El. T.	7ʰ· 49ᵐ·	log. cosec.*	0.069
		const. log.	8.523
Correction	0ˢ·.26	log.	9.418

Degree of Dependence.

An error of 5′ in the latitude would not affect the corresponding part of the equation of equal altitudes by more than one hundredth of its amount in the most unfavorable case, and in general would have no sensible effect. It is one of the advantages of the equal altitude method, therefore, that it does not require an accurate knowledge of the latitude. It is also plain that errors in the longitude affecting the declination and its hourly difference produce but small proportionate effects upon the computed equation. The absolute error of the chronometer on Greenwich will be affected by the whole error in the longitude, but the *rate* will still be correct. Hence we conclude that by this method the chronometer may be accurately *rated* at a place whose latitude and longitude are both imperfectly known.

The chief source of error is in the observation itself. The most practised observers with the sextant cannot depend on the noted time of a *single* contact within 0ˢ·.5, and hence the intervals between the successive chronometer times (which, if observations could be perfectly taken would be sensibly equal) may differ 2ˢ·. But the greatest probable error of the chronometer time of sun's or star's transit, from the mean of six such observations on each side of the meridian, is found to be not more than 0ˢ·.2, provided the rate of the chronometer between the observations is uniform.

Errors resulting from changes in the refraction may be almost wholly removed by computation as above.

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* Enter Bowditch's Table XXVII., column P. M., with the *whole* elapsed time and take out the corresponding cosecant.

EXPLANATION OF THE TABLES.

Table I. — *Logarithms of A and B, for computing the Equation of Equal Altitudes*, are calculated by the formulas

$$A = \frac{E}{1800 \sin \frac{1}{2} E}, \quad B = \frac{E}{1800 \tan \frac{1}{2} E},$$

where E = elapsed time in minutes, and E in the denominator is the elapsed time expressed in arc.

If we put

ϕ = latitude of the place of observation, + north, — south,
δ = declination of the sun, + north, — south,
Δ = hourly change of declination, + north, — south,
χ = correction to reduce the middle chronometer time to chronometer time of apparent noon, algebraically additive,
χ' = the same for midnight,

we have

$$\chi = - A \Delta \tan \phi + B \Delta \tan \delta$$
$$\chi' = A \Delta \tan \phi + B \Delta \tan \delta.$$

Table II. — *Logarithms of Numbers* to four decimal places. The first two figures of the number are found in the left-hand column, the third at the top, and the corresponding logarithm opposite and under these respectively. The proportional part for the fourth figure is found on the side in the same line with the logarithm taken out. The proper characteristic of the logarithm is to be supplied by the usual rule.

Table III. — *Mean Refraction*, reduced from Bessel's Tables, to barometer 30 inches, and thermometer 50°.

Tables III. A. and III. B. — *Corrections of the Mean Refraction for the Height of the Barometer and Thermometer*, also deduced from Bessel's Tables. These are the same as Tables IV. A. and IV. B., given in the Appendix to the Nautical Almanac for 1855, where they are used for finding the corrections of the *Mean Reduced Refraction for Lunars*. It is for the purpose of having the same table for correcting both these mean refraction tables, that the argument in Tables III. A. and III. B. is the mean refraction instead of the apparent altitude.

Table IV. — *For converting Sidereal into Mean Solar Time.* This table gives the correction required to reduce a sidereal interval to its equivalent solar interval.

TABLE I. LOG. A. AND LOG. B.

For Computing the Equation of Equal Altitudes.

For Noon, A — }
For Midnight, A + }

ARGUMENT = ELAPSED TIME.

{ For Noon or
{ Midnight, B +

Elapsed Time.	$0^{\text{h.}}$		$1^{\text{h.}}$		$2^{\text{h.}}$		$3^{\text{h.}}$		$4^{\text{h.}}$		$5^{\text{h.}}$	
m	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.
0	9.4059	9.4059	9.4072	9.4034	9.4109	9.3959	9.4172	9.3828	9.4260	9.3635	9.4374	9.3369
1	.4059	.4059	.4072	.4034	.4110	.3957	.4173	.3825	.4261	.3631	.4376	.3364
2	.4059	.4059	.4073	.4033	.4111	.3955	.4174	.3822	.4263	.3627	.4378	.3358
3	.4059	.4059	.4073	.4032	.4112	.3953	.4175	.3820	.4265	.3624	.4380	.3353
4	.4059	.4059	.4074	.4031	.4113	.3952	.4177	.3817	.4266	.3620	.4383	.3348
5	9.4059	9.4059	9.4074	9.4030	9.4113	9.3950	9.4178	9.3814	9.4268	9.3616	9.4385	9.3343
6	.4060	.4059	.4074	.4029	.4114	.3948	.4179	.3811	.4270	.3612	.4387	.3337
7	.4060	.4059	.4075	.4028	.4115	.3946	.4181	.3809	.4272	.3608	.4389	.3332
8	.4060	.4059	.4075	.4027	.4116	.3944	.4182	.3806	.4273	.3604	.4391	.3327
9	.4060	.4059	.4076	.4026	.4117	.3943	.4183	.3803	.4275	.3600	.4393	.3321
10	9.4060	9.4059	9.4076	9.4025	9.4118	9.3941	9.4184	9.3800	9.4277	9.3596	9.4396	9.3316
11	.4060	.4059	.4077	.4024	.4119	.3939	.4186	.3797	.4279	.3592	.4398	.3311
12	.4060	.4058	.4077	.4023	.4120	.3937	.4187	.3794	.4280	.3588	.4400	.3305
13	.4060	.4058	.4078	.4022	.4121	.3935	.4188	.3792	.4282	.3584	.4402	.3300
14	.4060	.4058	.4078	.4021	.4121	.3933	.4190	.3789	.4284	.3580	.4405	.3294
15	9.4060	9.4058	9.4079	9.4020	9.4122	9.3931	9.4191	9.3786	9.4286	9.3576	9.4407	9.3289
16	.4060	.4058	.4079	.4019	.4123	.3929	.4193	.3783	.4288	.3572	.4409	.3283
17	.4060	.4057	.4080	.4018	.4124	.3927	.4194	.3780	.4289	.3568	.4411	.3278
18	.4061	.4057	.4080	.4017	.4125	.3925	.4195	.3777	.4291	.3564	.4414	.3272
19	.4061	.4057	.4081	.4016	.4126	.3923	.4197	.3774	.4293	.3559	.4416	.3266
20	9.4061	9.4057	9.4081	9.4015	9.4127	9.3921	9.4198	9.3771	9.4295	9.3555	9.4418	9.3261
21	.4061	.4056	.4082	.4014	.4128	.3919	.4199	.3768	.4297	.3551	.4420	.3255
22	.4061	.4056	.4083	.4013	.4129	.3917	.4201	.3765	.4299	.3547	.4423	.3249
23	.4061	.4056	.4083	.4012	.4130	.3915	.4202	.3762	.4300	.3542	.4425	.3244
24	.4061	.4055	.4084	.4010	.4131	.3913	.4204	.3759	.4302	.3538	.4427	.5238
25	9.4062	9.4055	9.4084	9.4009	9.4132	9.3911	9.4205	9.3756	9.4304	9.3534	9.4430	9.3232
26	.4062	.4055	.4085	.4008	.4133	.3909	.4207	.3752	.4306	.3530	.4432	.3226
27	.4062	.4054	.4086	.4007	.4134	.3907	.4208	.3749	.4308	.3525	.4434	.3220
28	.4062	.4054	.4086	.4006	.4135	.3905	.4209	.3746	.4310	.3521	.4437	.3214
29	.4062	.4054	.4087	.4004	.4136	.3903	.4211	.3743	.4312	.3516	.4439	.3208
30	9.4062	9.4053	9.4087	9.4003	9.4137	9.3900	9.4212	9.3740	9.4314	9.3512	9.4441	9.3203
31	.4063	.4053	.4088	.4002	.4138	.3898	.4214	.3737	.4315	.3508	.4444	.3197
32	.4063	.4052	.4089	.4001	.4139	.3896	.4215	.3733	.4317	.3503	.4446	.3191
33	.4063	.4052	.4089	.3999	.4140	.3894	.4217	.3730	.4319	.3499	.4448	.3185
34	.4063	.4051	.4090	.3998	.4141	.3892	.4218	.3727	.4321	.3494	.4451	.3178
35	9.4064	9.4051	9.4091	9.3997	9.4142	9.3889	9.4220	9.3723	9.4323	9.3490	9.4453	9.3172
36	.4064	.4050	.4091	.3995	.4144	.3887	.4221	.3720	.4325	.3485	.4456	.3166
37	.4064	.4050	.4092	.3994	.4145	.3885	.4223	.3717	.4327	.3480	.4458	.3160
38	.4064	.4049	.4093	.3993	.4146	.3882	.4224	.3713	.4329	.3476	.4460	.3154
39	.4065	.4049	.4093	.3991	.4147	.3880	.4226	.3710	.4331	.3471	.4463	.3148
40	9.4065	9.4048	9.4094	9.3990	9.4148	9.3878	9.4227	9.3707	9.4333	9.3467	9.4465	9.3142
41	.4065	.4048	.4095	.3988	.4149	.3875	.4229	.3703	.4335	.3462	.4468	.3135
42	.4065	.4047	.4095	.3987	.4150	.3873	.4231	.3700	.4337	.3457	.4470	.3129
43	.4066	.4047	.4096	.3985	.4151	.3871	.4232	.3696	.4339	.3453	.4473	.3123
44	.4066	.4046	.4097	.3984	.4152	.3868	.4234	.3693	.4341	.3448	.4475	.3116
45	9.4066	9.4045	9.4097	9.3982	9.4154	9.3866	9.4235	9.3690	9.4343	9.3443	9.4477	9.3110
46	.4067	.4045	.4098	.3981	.4155	.3863	.4237	.3686	.4345	.3438	.4480	.3103
47	.4067	.4044	.4099	3979	.4156	.3861	.4238	.3683	.4347	.3433	.4482	.3097
48	.4067	.4043	.4100	.3978	.4157	.3859	.4240	.3679	.4349	.3429	.4485	.3091
49	.4068	.4043	.4100	.3976	.4158	.3856	.4242	.3675	.4351	.3424	.4487	.3084
50	9.4068	9.4042	9.4101	9.3975	9.4159	9.3854	9.4243	9.3672	9.4353	9.3419	9.4490	9.3078
51	.4068	.4041	.4102	.3973	.4161	.3851	.4245	.3668	.4355	.3414	.4492	.3071
52	.4069	.4041	.4103	.3972	.4162	.3849	.4246	.3665	.4357	.3409	.4494	.3064
53	.4069	.4040	.4103	.3970	.4163	.3846	.4248	.3661	.4359	.3404	.4497	.3058
54	.4069	.4039	.4104	.3969	.4164	.3843	.4250	.3657	.4361	.3399	.4500	.3051
55	9.4070	9.4038	9.4105	9.3967	9.4165	9.3841	9.4251	9.3654	9.4363	9.3394	9.4503	9.3044
56	.4070	.4038	.4106	.3965	.4167	.3838	.4253	.3650	.4366	.3389	.4505	.3038
57	.4071	.4037	.4107	.3964	.4168	.3836	.4255	.3646	.4368	.3384	.4508	.3031
58	.4071	.4036	.4107	.3962	.4169	.3833	.4256	.3643	.4370	.3379	.4510	.3024
59	.4071	.4035	.4108	.3960	.4170	.3830	.4258	.3639	.4372	.3374	.4513	.3017
60	9.4072	9 4034	9.4109	9.3959	9.4172	9.3828	9.4260	9.3635	9.4374	9.3369	9.4515	9.3010

TABLE I. LOG. A. AND LOG. B.

For Computing the Equation of Equal Altitudes.

For Noon, A —
For Midnight, A + } ARGUMENT = ELAPSED TIME. { For Noon or Midnight, B +

Elapsed Time.	$6^{h.}$		$7^{h.}$		$8^{h.}$		$9^{h.}$		$10^{h.}$		$11^{h.}$	
	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.
m												
0	9.4515	9.3010	9.4685	9.2530	9.4884	9.1874	9.5115	9.0943	9.5379	8.9509	9.5680	8.6837
1	.4518	.3003	.4688	.2520	.4888	.1861	.5119	.0925	.5384	.9478	.5685	.6770
2	.4521	.2996	.4691	.2511	.4892	.1848	.5123	.0906	.5389	.9447	.5691	.6701
3	.4523	.2989	.4694	.2502	.4895	.1835	.5127	.0887	.5393	.9416	.5696	.6632
4	.4526	.2982	.4697	.2492	.4899	.1822	.5132	.0867	.5398	.9384	.5701	.6560
5	9.4528	9.2975	9.4701	9.2483	9.4902	9.1809	9.5136	9.0848	9.5403	8.9352	9.5707	8.6488
6	.4531	.2968	.4704	.2473	.4906	.1796	.5140	.0828	.5408	.9320	.5712	.6414
7	.4534	.2961	.4707	.2463	.4910	.1782	.5144	.0809	.5412	.9287	.5718	.6339
8	.4536	.2954	.4710	.2454	.4913	.1769	.5148	.0789	.5417	.9254	.5723	.6262
9	.4539	.2947	.4713	.2444	.4917	.1756	.5153	.0769	.5422	.9221	.5728	.6183
10	9.4542	9.2940	9.4716	9.2434	9.4921	9.1742	9.5157	9.0749	9.5427	8.9187	9.5734	8.6103
11	.4544	.2932	.4719	.2425	.4924	.1728	.5161	.0729	.5432	.9153	.5739	.6021
12	.4547	.2925	.4723	.2415	.4928	.1715	.5165	.0708	.5436	.9118	.5745	.5937
13	.4550	.2918	.4726	.2405	.4932	.1701	.5169	.0688	.5441	.9083	.5750	.5852
14	.4552	.2911	.4729	.2395	.4935	.1687	.5174	.0667	.5446	.9048	.5756	.5764
15	9.4555	9.2903	9.4732	9.2385	9.4939	9.1673	9.5178	9.0646	9.5451	8.9013	9.5761	8.5674
16	.4558	.2896	.4735	.2375	.4943	.1659	.5182	.0625	.5456	.8977	.5767	.5583
17	.4561	.2888	.4738	.2365	.4946	.1645	.5186	.0604	.5461	.8940	.5772	.5488
18	.4563	.2881	.4742	.2355	.4950	.1630	.5191	.0583	.5466	.8903	.5778	.5392
19	.4566	.2873	.4745	.2344	.4954	.1616	.5195	.0561	.5470	.8866	.5783	.5293
20	9.4569	9.2866	9.4748	9.2334	9.4958	9.1602	9.5199	9.0540	9.5475	8.8829	9.5789	8.5192
21	.4572	.2858	.4751	.2324	.4961	.1587	.5204	.0518	.5480	.8791	.5794	.5088
22	.4574	.2850	.4755	.2313	.4965	.1573	.5208	.0496	.5485	.8752	.5800	.4981
23	.4577	.2843	.4758	.2303	.4969	.1558	.5212	.0474	.5490	.8713	.5806	.4871
24	.4580	.2835	.4761	.2292	.4973	.1543	.5217	.0452	.5495	.8674	.5811	.4758
25	9.4583	9.2827	9.4764	9.2282	9.4977	9.1528	9.5221	9.0429	9.5500	8.8634	9.5817	8.4641
26	.4585	.2819	.4768	.2271	.4980	.1513	.5225	.0406	.5505	.8594	.5822	.4521
27	.4588	.2812	.4771	.2261	.4984	.1498	.5230	.0383	.5510	.8553	.5828	.4397
28	.4591	.2804	.4774	.2250	.4988	.1483	.5234	.0360	.5515	.8512	.5834	.4270
29	.4594	.2796	.4778	.2239	.4992	.1468	.5238	.0337	.5520	.8470	.5839	.4138
30	9.4597	9.2788	9.4781	9.2228	9.4996	9.1453	9.5243	9.0314	9.5525	8.8427	9.5845	8.4001
31	.4600	.2780	.4784	.2217	.5000	.1437	.5247	.0290	.5530	.8384	.5851	.3860
32	.4602	.2772	.4788	.2206	.5003	.1422	.5252	.0266	.5535	.8341	.5856	.3713
33	.4605	.2764	.4791	.2195	.5007	.1406	.5256	.0242	.5540	.8297	.5862	.3561
34	.4608	.2756	.4794	.2184	.5011	.1390	.5261	.0218	.5545	.8253	.5868	.3403
35	9.4611	9.2747	9.4798	9.2173	9.5015	9.1375	9.5265	9.0194	9.5550	8.8208	9.5874	8.3239
36	.4614	.2739	.4801	.2162	.5019	.1359	.5269	.0169	.5555	.8162	.5879	.3067
37	.4617	.2731	.4804	.2151	.5023	.1343	.5274	.0144	.5560	.8115	.5885	.2888
38	.4620	.2723	.4808	.2140	.5027	.1327	.5278	.0119	.5565	.8068	.5891	.2701
39	.4622	.2714	.4811	.2128	.5031	.1310	.5283	.0094	.5570	.8020	.5897	.2505
40	9.4625	9.2706	9.4815	9.2117	9.5035	9.1294	9.5287	9.0069	9.5576	8.7972	9.5902	8.2299
41	.4628	.2698	.4818	.2105	.5038	.1278	.5292	.0043	.5581	.7923	.5908	.2082
42	.4631	.2689	.4821	.2094	.5042	.1261	.5296	.0017	.5586	.7873	.5914	.1853
43	.4634	.2681	.4825	.2082	.5046	.1244	.5301	8.9991	.5591	.7823	.5920	.1611
44	.4637	.2672	.4828	.2070	.5050	.1228	.5305	.9965	.5596	.7772	.5926	.1354
45	9.4640	9.2664	9.4832	9.2059	9.5054	9.1211	9.5310	8.9938	9.5601	8.7720	9.5931	8.1080
46	.4643	.2655	.4835	.2047	.5058	.1194	.5315	.9911	.5606	.7668	.5937	.0786
47	.4646	.2646	.4839	.2035	.5062	.1177	.5319	.9884	.5612	.7614	.5943	.0470
48	.4649	.2638	.4842	.2023	.5066	.1159	.5324	.9857	.5617	.7560	.5949	.0128
49	.4652	.2629	.4846	.2011	.5070	.1142	.5328	.9830	.5622	.7505	.5955	7.9756
50	9.4655	9.2620	9.4849	9.1999	9.5074	9.1125	9.5333	8.9802	9.5627	8.7449	9.5961	7.9348
51	.4658	.2611	.4853	.1987	.5078	.1107	.5337	.9774	.5632	.7392	.5967	.8897
52	.4661	.2602	.4856	.1974	.5082	.1089	.5342	.9745	.5638	.7335	.5973	.8391
53	.4664	.2593	.4860	.1962	.5086	.1072	.5347	.9717	.5643	.7276	.5979	.7817
54	.4667	.2584	.4863	.1950	.5091	.1054	.5351	.9688	.5648	.7217	.5985	.7154
55	9.4670	9.2575	9.4867	9.1937	9.5095	9.1036	9.5356	8.9659	9.5654	8.7156	9.5991	7.6368
56	.4673	.2566	.4870	.1925	.5099	.1017	.5361	.9630	.5659	.7094	.5997	.5405
57	.4676	.2557	.4874	.1912	.5103	.0999	.5365	.9600	.5664	.7032	.6003	.4162
58	.4679	.2548	.4877	.1900	.5107	.0981	.5370	.9570	.5669	.6968	.6009	.2407
59	.4682	.2539	.4881	.1887	.5111	.0962	.5375	.9540	.5675	.6903	.6015	6.9591
60	9.4685	9.2530	9.4884	9.1874	9.5115	9.0943	9.5379	8.9509	9.5680	8.6837	9.6021	*Inf.*

TABLE I. LOG. A. AND LOG. B.

For Computing the Equation of Equal Altitudes.

For Noon, A — }
For Midnight, A + }

ARGUMENT = ELAPSED TIME.

{ For Noon or
{ Midnight, B —

Elapsed Time.	$12^{\text{h.}}$		$13^{\text{h.}}$		$14^{\text{h.}}$		$15^{\text{h.}}$		$16^{\text{h.}}$		$17^{\text{h.}}$	
	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.
m												
0	9.6021	*Inf.*	9.6406	8.7563	9.6841	9.0971	9.7333	9.3162	9.7895	9.4884	9.8539	9.6383
1	.6027	6.9603	.6412	.7641	.6848	.1014	.7342	.3194	.7905	.4911	.8550	.6407
2	.6033	7.2431	.6419	.7718	.6856	.1057	.7351	.3225	.7915	.4937	.8562	.6431
3	.6039	.4198	.6426	.7794	.6864	.1099	.7360	.3256	.7925	.4963	.8573	.6455
4	.6045	.5453	.6433	.7868	.6872	.1141	.7369	.3287	.7935	.4990	.8585	.6478
5	9.6051	7.6428	9.6440	8.7942	9.6879	9.1183	9.7378	9.3319	9.7945	9.5016	9.8597	9.6502
6	.6057	.7226	.6447	.8015	.6887	.1224	.7386	.3350	.7955	.5042	.8608	.6526
7	.6063	.7902	.6454	.8087	.6895	.1265	.7395	.3380	.7965	.5068	.8620	.6550
8	.6069	.8488	.6461	.8158	.6903	.1306	.7404	.3411	.7975	.5094	.8632	.6573
9	.6075	.9005	.6467	.8227	.6911	.1347	.7413	.3442	.7986	.5120	.8644	.6597
10	9.6082	7.9469	9.6474	8.8296	9.6919	9.1387	9.7422	9.3472	9.7996	9.5146	9.8655	9.6621
11	.6088	.9889	.6481	.8364	.6926	.1428	.7431	.3503	.8006	.5171	.8667	.6644
12	.6094	8.0273	.6488	.8432	.6934	.1468	.7440	.3533	.8016	.5197	.8679	.6668
13	.6100	.0627	.6495	.8498	.6942	.1507	.7449	.3563	.8027	.5223	.8691	.6691
14	.6106	.0955	.6502	.8564	.6950	.1547	.7458	.3593	.8037	.5248	.8703	.6715
15	9.6112	8.1260	9.6509	8.8628	9.6958	9.1586	9.7467	9.3623	9.8047	9.5274	9.8715	9.6738
16	.6119	.1547	.6516	.8692	.6966	.1625	.7476	.3653	.8058	.5300	.8727	.6762
17	.6125	.1816	.6523	.8756	.6974	.1664	.7485	.3683	.8068	.5325	.8739	.6785
18	.6131	.2071	.6530	.8818	.6982	.1703	.7494	.3713	.8078	.5351	.8751	.6809
19	.6137	.2312	.6538	.8880	.6990	.1741	.7503	.3742	.8089	.5376	.8763	.6832
20	9.6144	8.2541	9.6545	8.8941	9.6998	9.1779	9.7512	9.3772	9.8099	9.5401	9.8775	9.6856
21	.6150	.2759	.6552	.9002	.7006	.1817	.7522	.3801	.8110	.5427	.8787	.6879
22	.6156	.2967	.6559	.9062	.7014	.1855	.7531	.3831	.8120	.5452	.8799	.6903
23	.6163	.3166	.6566	.9121	.7022	.1893	.7540	.3860	.8131	.5477	.8812	.6926
24	.6169	.3357	.6573	.9180	.7030	.1930	.7549	.3889	.8141	.5502	.8824	.6949
25	9.6175	8.3540	9.6580	8.9238	9.7038	9.1967	9.7558	9.3918	9.8152	9.5528	9.8836	9.6973
26	.6182	.3717	.6588	.9295	.7047	.2004	.7568	.3947	.8162	.5553	.8848	.6996
27	.6188	.3887	.6595	.9352	.7055	.2041	.7577	.3976	.8173	.5578	.8861	.7019
28	.6194	.4051	.6602	.9408	.7063	.2078	.7586	.4005	.8184	.5603	.8873	.7043
29	.6201	.4210	.6609	.9464	.7071	.2114	.7595	.4033	.8194	.5628	.8885	.7066
30	9.6207	8.4363	9.6616	8.9519	9.7079	9.2150	9.7605	9.4062	9.8205	9.5653	9.8898	9.7089
31	.6214	.4512	.6624	.9573	.7088	.2186	.7614	.4090	.8216	.5677	.8910	.7112
32	.6220	.4657	.6631	.9627	.7096	.2222	.7624	.4119	.8227	.5702	.8923	.7136
33	.6226	.4796	.6638	.9681	.7104	.2258	.7633	.4147	.8237	.5727	.8935	.7159
34	.6233	.4932	.6645	.9734	.7112	.2293	.7642	.4175	.8248	.5752	.8948	.7182
35	9.6239	8.5064	9.6653	8.9787	9.7121	9.2329	9.7652	9.4204	9.8259	9.5777	9.8961	9.7205
36	.6246	.5192	.6660	.9839	.7129	.2364	.7661	.4232	.8270	.5801	.8973	.7228
37	.9252	.5318	.6667	.9891	.7137	.2399	.7671	.4260	.8281	.5826	.8986	.7251
38	.6259	.5440	.6675	.9942	.7146	.2434	.7680	.4288	.8292	.5850	.8999	.7275
39	.6265	.5559	.6682	.9993	.7154	.2468	.7690	.4316	.8303	.5875	.9011	.7298
40	9.6272	8.5675	9.6690	9.0043	9.7162	9.2503	9.7699	9.4343	9.8314	9.5900	9.9024	9.7321
41	.6279	.5788	.6697	.0093	.7171	.2537	.7709	.4371	.8325	.5924	.9037	.7344
42	.6285	.5899	.6704	.0142	.7179	.2571	.7718	.4399	.8336	.5948	.9050	.7367
43	.6292	.6008	.6712	.0191	.7187	.2605	.7728	.4426	.8347	.5973	.9063	.7590
44	.6298	.6114	.6719	.0240	.7196	.2639	.7738	.4454	.8358	.5997	.9075	.7413
45	9.6305	8.6218	9.6727	9.0288	9.7204	9.2673	9.7747	9.4481	9.8369	9.6022	9.9088	9.7436
46	.6311	.6320	.6734	.0336	.7213	.2706	.7757	.4509	.8380	.6046	.9101	.7459
47	.6318	.6419	.6742	.0384	.7221	.2740	.7767	.4536	.8391	.6070	.9114	.7482
48	.6325	.6517	.6749	.0431	.7230	.2773	.7776	.4563	.8402	.6094	.9127	.7505
49	.6331	.6613	.6757	.0478	.7238	.2806	.7786	.4590	.8414	.6119	.9140	.7529
50	9.6338	8.6707	9.6764	9.0524	9.7247	9.2839	9.7796	9.4617	9.8425	9.6143	9.9154	9.7552
51	.6345	.6799	.6772	.0570	.7256	.2872	.7806	.4644	.8436	.6167	.9167	.7575
52	.6351	.6890	.6779	.0616	.7264	.2905	.7815	.4671	.8447	.6191	.9180	.7598
53	.6358	.6979	.6787	.0662	.7273	.2937	.7825	.4698	.8459	.6215	.9193	.7621
54	.6365	.7067	.6795	.0707	.7281	.2970	.7835	.4725	.8470	.6239	.9206	.7644
55	9.6372	8.7153	9.6802	9.0752	9.7290	9.3002	9.7845	9.4752	9.8481	9.6263	9.9220	9.7667
56	.6378	.7237	.6810	.0796	.7299	.3034	.7855	.4778	.8493	.6287	.9233	.7690
57	.6385	.7321	.6818	.0840	.7307	.3066	.7865	.4805	.8504	.6311	.9246	.7713
58	.6392	.7402	.6825	.0884	.7316	.3098	.7875	.4831	.8516	.6335	.9260	.7736
59	.6399	.7483	.6833	.0928	.7324	.3130	.7885	.4858	.8527	.6359	.9273	.7759
60	9.6406	8 7563	9.6841	9.0971	9.7333	9.3162	9.7895	9.4884	9.8539	9.6383	9.9287	9.7782

TABLE I. LOG. A. AND LOG. B.

For Computing the Equation of Equal Altitudes.

For Noon, A —
For Midnight, A +

ARGUMENT = ELAPSED TIME.

For Noon or Midnight, B —

Elapsed Time.	$18^{h.}$		$19^{h.}$		$20^{h.}$		$21^{h.}$		$22^{h.}$		$23^{h.}$	
	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.	Log. A.	Log. B.
m												
0	9.9287	9.7782	0.0172	9.9167	0.1249	0.0625	0.2623	0.2279	0 4523	0.4372	0.7689	0.7652
1	.9300	.7804	.0188	.9190	.1269	.0650	.2649	.2309	.4562	.4414	.7765	.7729
2	.9314	.7827	.0204	.9213	.1290	.0676	.2676	.2339	.4601	.4455	.7842	.7807
3	.9327	.7850	.0221	.9237	.1310	.0701	.2702	.2370	.4640	.4497	.7920	.7886
4	.9341	.7873	.0237	.9260	.1330	.0727	.2729	.2401	.4680	.4540	.8000	.7967
5	9.9355	9.7896	0.0253	9.9284	0.1351	0.0753	0.2756	0.2431	0.4720	0.4582	0.8081	0.8049
6	.9368	.7919	.0270	.9307	.1371	.0779	.2783	.2462	.4761	.4625	.8163	.8133
7	.9382	.7942	.0286	.9331	.1392	.0805	.2810	.2493	.4801	.4668	.8247	.8218
8	.9396	.7965	.0303	.9355	.1412	.0830	.2838	.2524	.4842	.4711	.8333	.8305
9	.9410	.7988	.0319	.9378	.1433	.0856	.2865	.2556	.4884	.4755	.8420	.8393
10	9.9424	9.8011	0.0336	9.9402	0.1454	0.0882	0.2893	0.2587	0.4926	0.4799	0.8508	0.8483
11	.9437	.8034	.0353	.9426	.1475	.0909	.2921	.2619	.4968	.4844	.8599	.8574
12	.9451	.8057	.0370	.9449	.1496	.0935	.2949	.2650	.5010	.4889	.8691	.8667
13	.9465	.8080	.0386	.9473	.1517	.0961	.2977	.2682	.5053	.4934	.8786	.8763
14	.9479	.8103	.0403	.9497	.1538	.0987	.3005	.2714	.5097	.4980	.8882	.8860
15	9.9493	9.8126	0.0420	9.9520	0.1559	0.1013	0.3034	0.2746	0.5140	0.5026	0.8980	0.8959
16	.9508	.8149	.0437	.9544	.1581	.1040	.3063	.2778	.5184	.5072	.9080	.9060
17	.9522	.8172	.0454	.9568	.1602	.1066	.3091	.2811	.5229	.5118	.9183	.9164
18	.9536	.8195	.0472	.9592	.1623	.1093	.3120	.2843	.5274	.5165	.9288	.9270
19	.9550	.8218	.0489	.9616	.1645	.1119	.3150	.2876	.5319	.5213	.9396	.9378
20	9.9564	9.8241	0.0506	9.9640	0.1667	0.1146	0.3179	0.2909	0.5365	0.5261	0.9506	0.9489
21	.9579	.8264	.0523	.9664	.1689	.1173	.3208	.2942	.5411	.5309	.9618	.9603
22	.9593	.8287	.0541	.9687	.1711	.1200	.3238	.2975	.5458	.5358	.9734	.9719
23	.9607	.8310	.0558	.9711	.1733	.1226	.3268	.3008	.5505	.5407	.9853	.9839
24	.9622	.8333	.0576	.9735	.1755	.1253	.3298	.3041	.5553	.5457	.9975	.9961
25	9.9636	9.8356	0.0593	9.9760	0.1777	0.1280	0.3328	0.3075	0.5601	0.5507	1.0100	1.0087
26	.9651	.8379	.0611	.9784	.1799	.1308	.3359	.3109	.5649	.5557	.0228	.0216
27	.9665	.8402	.0628	.9808	.1821	.1335	.3389	.3143	.5698	.5608	.0361	.0350
28	.9680	.8425	.0646	.9832	.1844	.1362	.3420	.3177	.5748	.5660	.0497	.0487
29	.9695	.8448	.0664	.9856	.1867	.1389	.3451	.3211	.5798	.5712	.0638	.0628
30	9.9709	9.8471	0.0682	9.9880	0.1889	0.1417	0 3482	0.3245	0.5848	0.5764	1.0783	1.0774
31	.9724	.8494	.0700	.9904	.1912	.1444	.3514	.3280	.5899	.5817	.0934	.0925
32	.9739	.8517	.0718	.9929	.1935	.1472	.3545	.3315	.5951	.5871	.1089	.1081
33	.9754	.8540	.0736	.9953	.1958	.1499	.3577	.3350	.6003	.5925	.1250	.1242
34	.9769	.8563	.0754	.9977	.1981	.1527	.3609	.3385	.6056	.5979	.1416	.1409
35	9.9784	9.8586	0.0772	0.0002	0.2004	0.1555	0.3641	0.3420	0.6110	0 6034	1.1590	1.1583
36	.9798	.8609	.0790	.0026	.2028	.1582	.3674	.3456	.6164	.6090	.1770	.1764
37	.9813	.8632	.0809	.0051	.2051	.1610	.3706	.3491	.6218	.6147	.1958	.1952
38	.9829	.8655	.0827	.0075	.2075	.1638	.3739	.3527	.6273	.6204	.2154	.2149
39	.9844	.8678	.0845	.0100	.2098	.1667	.3772	.3563	.6329	.6261	.2359	.2354
40	9.9859	9.8701	0.0864	0.0124	0.2122	0.1695	0.3805	0.3599	0.6386	0.6319	1.2573	1.2569
41	.9874	.8724	.0883	.0149	.2146	.1723	.3839	.3636	.6443	.6378	.2799	.2795
42	.9889	.8748	.0901	.0173	.2170	.1751	.3873	.3673	.6501	.6438	.3037	.3033
43	.9904	.8771	.0920	.0198	.2194	.1780	.3907	.3710	.6560	.6498	.3288	.3285
44	.9920	.8794	.0939	.0223	.2218	.1808	.3941	.3747	.6619	.6559	.3554	.3552
45	9.9935	9.8817	0.0958	0.0248	0.2243	0.1837	0.3975	0.3784	0.6679	0.6621	1.3837	1.3835
46	.9951	.8840	.0976	.0272	.2267	.1866	.4010	.3822	.6740	.6684	.4140	.4138
47	.9966	.8863	.0995	.0297	.2292	.1895	.4045	.3859	.6802	.6747	.4465	.4463
48	.9982	.8887	.1015	.0322	.2316	.1924	.4080	.3897	.6865	.6811	.4815	.4814
49	.9998	.8910	.1034	.0347	.2341	.1953	.4115	.3936	.6928	.6876	.5196	.5195
50	0.0013	9.8933	0.1053	0.0372	0.2366	0.1982	0.4151	0.3974	0.6993	0.6942	1.5613	1.5612
51	.0029	.8956	.1072	.0397	.2391	.2011	.4187	.4013	.7058	.7008	.6074	.6073
52	.0044	.8980	.1092	.0422	.2416	.2040	.4223	.4052	.7124	.7076	.6588	.6587
53	.0060	.9003	.1111	.0447	.2442	.2070	.4260	.4091	.7191	.7144	.7171	.7171
54	.0076	.9026	.1131	.0473	.2467	.2099	.4297	.4130	.7259	.7214	.7844	.7843
55	0.0092	9.9050	0.1150	0.0498	0.2493	0.2129	0.4334	0.4170	0.7328	0.7284	1.8638	1.8638
56	.0108	.9073	.1170	.0523	.2518	.2159	.4371	.4210	.7398	.7355	.9610	.9610
57	.0124	.9096	.1190	.0548	.2544	.2189	.4408	.4250	.7469	.7428	2.0863	2.0863
58	.0140	.9120	.1209	.0574	.2570	.2219	.4446	.4291	.7541	.7501	.2627	.2627
59	.0156	.9143	.1229	.0599	.2596	.2249	.4485	.4331	.7615	.7576	2.5640	2.5640
60	0.0172	9 9167	0.1249	0.0625	0.2623	0.2279	0.4523	0.4372	0.7689	0.7652	*Inf.*	*Inf.*

TABLE II.

LOGARITHMS OF NUMBERS.

Natural Numbers.	0	1	2	3	4	5	6	7	8	9	Proportional Parts.								
											1	2	3	4	5	6	7	8	9
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0374	4	8	12	17	21	25	29	33	37
11	0414	0453	0492	0531	0569	0607	0645	0682	0719	0755	4	8	11	15	19	23	26	30	34
12	0792	0828	0864	0899	0934	0969	1004	1038	1072	1106	3	7	10	14	17	21	24	28	31
13	1139	1173	1206	1239	1271	1303	1335	1367	1399	1430	3	6	10	13	16	19	23	26	29
14	1461	1492	1523	1553	1584	1614	1644	1673	1703	1732	3	6	9	12	15	18	21	24	27
15	1761	1790	1818	1847	1875	1903	1931	1959	1987	2014	3	6	8	11	14	17	20	22	25
16	2041	2068	2095	2122	2148	2175	2201	2227	2253	2279	3	5	8	11	13	16	18	21	24
17	2304	2330	2355	2380	2405	2430	2455	2480	2504	2529	2	5	7	10	12	15	17	20	22
18	2553	2577	2601	2625	2648	2672	2695	2718	2742	2765	2	5	7	9	12	14	16	19	21
19	2788	2810	2833	2856	2878	2900	2923	2945	2967	2989	2	4	7	9	11	13	16	18	20
20	3010	3032	3054	3075	3096	3118	3139	3160	3181	3201	2	4	6	8	11	13	15	17	19
21	3222	3243	3263	3284	3304	3324	3345	3365	3385	3404	2	4	6	8	10	12	14	16	18
22	3424	3444	3464	3483	3502	3522	3541	3560	3579	3598	2	4	6	8	10	12	14	15	17
23	3617	3636	3655	3674	3692	3711	3729	3747	3766	3784	2	4	6	7	9	11	13	15	17
24	3802	3820	3838	3856	3874	3892	3909	3927	3945	3962	2	4	5	7	9	11	12	14	16
25	3979	3997	4014	4031	4048	4065	4082	4099	4116	4133	2	3	5	7	9	10	12	14	15
26	4150	4166	4183	4200	4216	4232	4249	4265	4281	4298	2	3	5	7	8	10	11	13	15
27	4314	4330	4346	4362	4378	4393	4409	4425	4440	4456	2	3	5	6	8	9	11	13	14
28	4472	4487	4502	4518	4533	4548	4564	4579	4594	4609	2	3	5	6	8	9	11	12	14
29	4624	4639	4654	4669	4683	4698	4713	4728	4742	4757	1	3	4	6	7	9	10	12	13
30	4771	4786	4800	4814	4829	4843	4857	4871	4886	4900	1	3	4	6	7	9	10	11	13
31	4914	4928	4942	4955	4969	4983	4997	5011	5024	5038	1	3	4	6	7	8	10	11	12
32	5051	5065	5079	5092	5105	5119	5132	5145	5159	5172	1	3	4	5	7	8	9	11	12
33	5185	5198	5211	5224	5237	5250	5263	5276	5289	5302	1	3	4	5	6	8	9	10	12
34	5315	5328	5340	5353	5366	5378	5391	5403	5416	5428	1	3	4	5	6	8	9	10	11
35	5441	5453	5465	5478	5490	5502	5514	5527	5539	5551	1	2	4	5	6	7	9	10	11
36	5563	5575	5587	5599	5611	5623	5635	5647	5658	5670	1	2	4	5	6	7	8	10	11
37	5682	5694	5705	5717	5729	5740	5752	5763	5775	5786	1	2	3	5	6	7	8	9	10
38	5798	5809	5821	5832	5843	5855	5866	5877	5888	5899	1	2	3	5	6	7	8	9	10
39	5911	5922	5933	5944	5955	5966	5977	5988	5999	6010	1	2	3	4	5	7	8	9	10
40	6021	6031	6042	6053	6064	6075	6085	6096	6107	6117	1	2	3	4	5	6	8	9	10
41	6128	6138	6149	6160	6170	6180	6191	6201	6212	6222	1	2	3	4	5	6	7	8	9
42	6232	6243	6253	6263	6274	6284	6294	6304	6314	6325	1	2	3	4	5	6	7	8	9
43	6335	6345	6355	6365	6375	6385	6395	6405	6415	6425	1	2	3	4	5	6	7	8	9
44	6435	6444	6454	6464	6474	6484	6493	6503	6513	6522	1	2	3	4	5	6	7	8	9
45	6532	6542	6551	6561	6571	6580	6590	6599	6609	6618	1	2	3	4	5	6	7	8	9
46	6628	6637	6646	6656	6665	6675	6684	6693	6702	6712	1	2	3	4	5	6	7	7	8
47	6721	6730	6739	6749	6758	6767	6776	6785	6794	6803	1	2	3	4	5	5	6	7	8
48	6812	6821	6830	6839	6848	6857	6866	6875	6884	6893	1	2	3	4	4	5	6	7	8
49	6902	6911	6920	6928	6937	6946	6955	6964	6972	6981	1	2	3	4	4	5	6	7	8
50	6990	6998	7007	7016	7024	7033	7042	7050	7059	7067	1	2	3	3	4	5	6	7	8
51	7076	7084	7093	7101	7110	7118	7126	7135	7143	7152	1	2	3	3	4	5	6	7	8
52	7160	7168	7177	7185	7193	7202	7210	7218	7226	7235	1	2	2	3	4	5	6	7	7
53	7243	7251	7259	7267	7275	7284	7292	7300	7308	7316	1	2	2	3	4	5	6	6	7
54	7324	7332	7340	7348	7356	7364	7372	7380	7388	7396	1	2	2	3	4	5	6	6	7

TABLE II.

LOGARITHMS OF NUMBERS.

Natural Numbers.	0	1	2	3	4	5	6	7	8	9	Proportional Parts.								
											1	2	3	4	5	6	7	8	9
55	7404	7412	7419	7427	7435	7443	7451	7459	7466	7474	1	2	2	3	4	5	5	6	7
56	7482	7490	7497	7505	7513	7520	7528	7536	7543	7551	1	2	2	3	4	5	5	6	7
57	7559	7566	7574	7582	7589	7597	7604	7612	7619	7627	1	2	2	3	4	5	5	6	7
58	7634	7642	7649	7657	7664	7672	7679	7686	7694	7701	1	1	2	3	4	4	5	6	7
59	7709	7716	7723	7731	7738	7745	7752	7760	7767	7774	1	1	2	3	4	4	5	6	7
60	7782	7789	7796	7803	7810	7818	7825	7832	7839	7846	1	1	2	3	4	4	5	6	6
61	7853	7860	7868	7875	7882	7889	7896	7903	7910	7917	1	1	2	3	4	4	5	6	6
62	7924	7931	7938	7945	7952	7959	7966	7973	7980	7987	1	1	2	3	3	4	5	6	6
63	7993	8000	8007	8014	8021	8028	8035	8041	8048	8055	1	1	2	3	3	4	5	5	6
64	8062	8069	8075	8082	8089	8096	8102	8109	8116	8122	1	1	2	3	3	4	5	5	6
65	8129	8136	8142	8149	8156	8162	8169	8176	8182	8189	1	1	2	3	3	4	5	5	6
66	8195	8202	8209	8215	8222	8228	8235	8241	8248	8254	1	1	2	3	3	4	5	5	6
67	8261	8267	8274	8280	8287	8293	8299	8306	8312	8319	1	1	2	3	3	4	5	5	6
68	8325	8331	8338	8344	8351	8357	8363	8370	8376	8382	1	1	2	3	3	4	4	5	6
69	8388	8395	8401	8407	8414	8420	8426	8432	8439	8445	1	1	2	2	3	4	4	5	6
70	8451	8457	8463	8470	8476	8482	8488	8494	8500	8506	1	1	2	2	3	4	4	5	6
71	8513	8519	8525	8531	8537	8543	8549	8555	8561	8567	1	1	2	2	3	4	4	5	5
72	8573	8579	8585	8591	8597	8603	8609	8615	8621	8627	1	1	2	2	3	4	4	5	5
73	8633	8639	8645	8651	8657	8663	8669	8675	8681	8686	1	1	2	2	3	4	4	5	5
74	8692	8698	8704	8710	8716	8722	8727	8733	8739	8745	1	1	2	2	3	4	4	5	5
75	8751	8756	8762	8768	8774	8779	8785	8791	8797	8802	1	1	2	2	3	3	4	5	5
76	8808	8814	8820	8825	8831	8837	8842	8848	8854	8859	1	1	2	2	3	3	4	5	5
77	8865	8871	8876	8882	8887	8893	8899	8904	8910	8915	1	1	2	2	3	3	4	4	5
78	8921	8927	8932	8938	8943	8949	8954	8960	8965	8971	1	1	2	2	3	3	4	4	5
79	8976	8982	8987	8993	8998	9004	9009	9015	9020	9025	1	1	2	2	3	3	4	4	5
80	9031	9036	9042	9047	9053	9058	9063	9069	9074	9079	1	1	2	2	3	3	4	4	5
81	9085	9090	9096	9101	9106	9112	9117	9122	9128	9133	1	1	2	2	3	3	4	4	5
82	9138	9143	9149	9154	9159	9165	9170	9175	9180	9186	1	1	2	2	3	3	4	4	5
83	9191	9196	9201	9206	9212	9217	9222	9227	9232	9238	1	1	2	2	3	3	4	4	5
84	9243	9248	9253	9258	9263	9269	9274	9279	9284	9289	1	1	2	2	3	3	4	4	5
85	9294	9299	9304	9309	9315	9320	9325	9330	9335	9340	1	1	2	2	3	3	4	4	5
86	9345	9350	9355	9360	9365	9370	9375	9380	9385	9390	1	1	2	2	3	3	4	4	5
87	9395	9400	9405	9410	9415	9420	9425	9430	9435	9440	0	1	1	2	2	3	3	4	4
88	9445	9450	9455	9460	9465	9469	9474	9479	9484	9489	0	1	1	2	2	3	3	4	4
89	9494	9499	9504	9509	9513	9518	9523	9528	9533	9538	0	1	1	2	2	3	3	4	4
90	9542	9547	9552	9557	9562	9566	9571	9576	9581	9586	0	1	1	2	2	3	3	4	4
91	9590	9595	9600	9605	9609	9614	9619	9624	9628	9633	0	1	1	2	2	3	3	4	4
92	9638	9643	9647	9652	9657	9661	9666	9671	9675	9680	0	1	1	2	2	3	3	4	4
93	9685	9689	9694	9699	9703	9708	9713	9717	9722	9727	0	1	1	2	2	3	3	4	4
94	9731	9736	9741	9745	9750	9754	9759	9763	9768	9773	0	1	1	2	2	3	3	4	4
95	9777	9782	9786	9791	9795	9800	9805	9809	9814	9818	0	1	1	2	2	3	3	4	4
96	9823	9827	9832	9836	9841	9845	9850	9854	9859	9863	0	1	1	2	2	3	3	4	4
97	9868	9872	9877	9881	9886	9890	9894	9899	9903	9908	0	1	1	2	2	3	3	4	4
98	9912	9917	9921	9926	9930	9934	9939	9943	9948	9952	0	1	1	2	2	3	3	4	4
99	9956	9961	9965	9969	9974	9978	9983	9987	9991	9996	0	1	1	2	2	3	3	3	4

TABLE III. MEAN REFRACTION.

Barometer 30 inches. Fahrenheit's Thermometer 50°.

Apparent Altitude. ° ′	Mean Refraction. ′ ″	Apparent Altitude. ° ′	Mean Refraction. ′ ″	Apparent Altitude. ° ′	Mean Refraction. ′ ″	Apparent Altitude. ° ′	Mean Refraction. ′ ″	Apparent Altitude. ° ′	Mean Refraction. ′ ″
		9 30	5 35.1	15 0	3 34.1	25 0	2 4.4	42 0	1 4.7
0 0	36 29.4	35	5 32.4	10	3 31.7	10	2 3.4	20	1 3.9
1 0	24 53.6	40	5 29.6	20	3 29.4	20	2 2.5	40	1 3.2
2 0	18 25.5	45	5 27.0	30	3 27.1	30	2 1.6	43 0	1 2.4
3 0	14 25.1	50	5 24.3	40	3 24.8	40	2 0.7	20	1 1.7
4 0	11 44.4	55	5 21.7	50	3 22.6	50	1 59.8	40	1 1.0
5 0	9 52.0	10 0	5 19.2	16 0	3 20.5	26 0	1 58.9	44 0	1 0.3
5	9 44.0	5	5 16.7	10	3 18.4	10	1 58.1	20	0 59.6
10	9 36.2	10	5 14.2	20	3 16.3	20	1 57.2	40	0 58.9
15	9 28.6	15	5 11.7	30	3 14.2	30	1 56.4	45 0	0 58.2
20	9 21.2	20	5 9.3	40	3 12.2	40	1 55.5	20	0 57.6
25	9 14.0	25	5 6.9	50	3 10.3	50	1 54.7	40	0 56.9
5 30	9 7.0	10 30	5 4.6	17 0	3 8.3	27 0	1 53.9	46 0	0 56.2
35	9 0.1	35	5 2.3	10	3 6.4	10	1 53.1	20	0 55.6
40	8 53.4	40	5 0.0	20	3 4.6	20	1 52.3	40	0 55.0
45	8 46.8	45	4 57.8	30	3 2.8	30	1 51.5	47 0	0 54.3
50	8 40.4	50	4 55.6	40	3 1.0	40	1 50.7	20	0 53.7
55	8 34.2	55	4 53.4	50	2 59.2	50	1 50.0	40	0 53.1
6 0	8 28.0	11 0	4 51.2	18 0	2 57.5	28 0	1 49.2	48 0	0 52.5
5	8 22.1	5	4 49.1	10	2 55.8	20	1 47.7	49 0	0 50.6
10	8 16.2	10	4 47.0	20	2 54.1	40	1 46.2	50 0	0 48.9
15	8 10.5	15	4 44.9	30	2 52.4	29 0	1 44.8	51 0	0 47.2
20	8 4.8	20	4 42.9	40	2 50.8	20	1 43.4	52 0	0 45.5
25	7 59.3	25	4 40.9	50	2 49.2	40	1 42.0	53 0	0 43.9
6 30	7 53.9	11 30	4 38.9	19 0	2 47.7	30 0	1 40.6	54 0	0 42.3
35	7 48.7	35	4 36.9	10	2 46.1	20	1 39.3	55 0	0 40.8
40	7 43.5	40	4 35.0	20	2 44.6	40	1 38.0	56 0	0 39.3
45	7 38.4	45	4 33.1	30	2 43.1	31 0	1 36.7	57 0	0 37.8
50	7 33.5	50	4 31.2	40	2 41.6	20	1 35.5	58 0	0 36.4
55	7 28.6	55	4 29.4	50	2 40.2	40	1 34.2	59 0	0 35.0
7 0	7 23.8	12 0	4 27.5	20 0	2 38.8	32 0	1 33.0	60 0	0 33.6
5	7 19.2	5	4 25.7	10	2 37.4	20	1 31.8	61 0	0 32.3
10	7 14.6	10	4 23.9	20	2 36.0	40	1 30.7	62 0	0 31.0
15	7 10.1	15	4 22.2	30	2 34.6	33 0	1 29.5	63 0	0 29.7
20	7 5.7	20	4 20.4	40	2 33.3	20	1 28.4	64 0	0 28.4
25	7 1.4	25	4 18.7	50	2 32.0	40	1 27.3	65 0	0 27.2
7 30	6 57.1	12 30	4 17.0	21 0	2 30.7	34 0	1 26.2	66 0	0 25.9
35	6 53.0	35	4 15.3	10	2 29.4	20	1 25.1	67 0	0 24.7
40	6 48.9	40	4 13.6	20	2 28.1	40	1 24.1	68 0	0 23.6
45	6 44.9	45	4 12.0	30	2 26.9	35 0	1 23.1	69 0	0 22.4
50	6 41.0	50	4 10.4	40	2 25.7	20	1 22.0	70 0	0 21.2
55	6 37.1	55	4 8.8	50	2 24.5	40	1 21.0	71 0	0 20.1
8 0	6 33.3	13 0	4 7.2	22 0	2 23.3	36 0	1 20.1	72 0	0 18.9
5	6 29.6	5	4 5.6	10	2 22.1	20	1 19.1	73 0	0 17.8
10	6 25.9	10	4 4.1	20	2 20.9	40	1 18.2	74 0	0 16.7
15	6 22.3	15	4 2.6	30	2 19.8	37 0	1 17.2	75 0	0 15.6
20	6 18.8	20	4 1.0	40	2 18.7	20	1 16.3	76 0	0 14.5
25	6 15.3	25	3 59.6	50	2 17.5	40	1 15.4	77 0	0 13.5
8 30	6 11.9	13 30	3 58.1	23 0	2 16.4	38 0	1 14.5	78 0	0 12.4
35	6 8.5	35	3 56.6	10	2 15.4	20	1 13.6	79 0	0 11.3
40	6 5.2	40	3 55.2	20	2 14.3	40	1 12.7	80 0	0 10.3
45	6 2.0	45	3 53.7	30	2 13.3	39 0	1 11.9	81 0	0 9.2
50	5 58.8	50	3 52.3	40	2 12.2	20	1 11.0	82 0	0 8.2
55	5 55.7	55	3 50.9	50	2 11.2	40	1 10.2	83 0	0 7.2
9 0	5 52.6	14 0	3 49.5	24 0	2 10.2	40 0	1 9.4	84 0	0 6.1
5	5 49.6	10	3 46.8	10	2 9.2	20	1 8.6	85 0	0 5.1
10	5 46.6	20	3 44.2	20	2 8.2	40	1 7.8	86 0	0 4.1
15	5 43.6	30	3 41.6	30	2 7.2	41 0	1 7.0	87 0	0 3.1
20	5 40.7	40	3 39.0	40	2 6.2	20	1 6.2	88 0	0 2.0
25	5 37.9	50	3 36.5	50	2 5.3	40	1 5.4	89 0	0 1.0
9 30	5 35.1	15 0	3 34.1	25 0	2 4.4	42 0	1 4.7	90 0	0 0.0

TABLE III. A.

Correction of the Mean Refraction for the Height of the Barometer.

Barometer.							MEAN	REFRACTION.														Barometer.
	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	
Subtract.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Add.
27.50	0″	2″	5″	7″	10″	12″	15″	17″	20″	23″	25	28″	30″	33″	35″	38″	40″	43″	45″	48″	51″	
27.55	0	2	5	7	10	12	15	17	20	22	25	27	30	32	35	37	40	42	45	47	50	
27.60	0	2	5	7	10	12	14	17	19	22	24	27	29	31	34	36	39	41	44	46	49	
27.65	0	2	5	7	9	12	14	16	19	21	24	26	28	31	33	36	38	40	43	45	48	
27.70	0	2	5	7	9	11	14	16	18	21	23	25	28	30	32	35	37	39	42	44	47	
27.75	0	2	4	7	9	11	13	16	18	20	23	25	27	29	32	34	36	39	41	43	46	
27.80	0	2	4	7	9	11	13	15	18	20	22	24	27	29	31	33	35	38	40	42	45	
27.85	0	2	4	6	9	11	13	15	17	19	22	24	26	28	30	32	35	37	39	41	44	
27.90	0	2	4	6	8	10	13	15	17	19	21	23	25	27	30	32	34	36	38	40	43	
27.95	0	2	4	6	8	10	12	14	16	18	21	23	25	27	29	31	33	35	37	39	42	
28.00	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	41	
28.05	0	2	4	6	8	10	12	14	16	18	20	22	24	25	27	29	31	33	35	37	39	
28.10	0	2	4	6	8	9	11	13	15	17	19	21	23	25	27	29	31	33	34	36	38	
28.15	0	2	4	6	7	9	11	13	15	17	19	20	22	24	26	28	30	32	34	36	37	
28.20	0	2	4	5	7	9	11	13	14	16	18	20	22	24	25	27	29	31	33	35	36	
28.25	0	2	3	5	7	9	10	12	14	16	18	19	21	23	25	26	28	30	32	34	35	
28.30	0	2	3	5	7	8	10	12	14	15	17	19	21	22	24	26	27	29	31	33	34	
28.35	0	2	3	5	7	8	10	12	13	15	17	18	20	22	23	25	27	28	30	32	33	
28 40	0	2	3	5	6	8	10	11	13	14	16	18	19	21	23	24	26	27	29	31	32	
28.45	0	2	3	5	6	8	9	11	12	14	16	17	19	20	22	23	25	27	28	30	31	
28.50	0	1	3	4	6	7	9	10	12	14	15	17	18	20	21	23	24	26	27	29	30	31.50
28.55	0	1	3	4	6	7	9	10	12	13	15	16	17	19	20	22	23	25	26	28	29	31.45
28.60	0	1	3	4	6	7	8	10	11	13	14	15	17	18	20	21	23	24	25	27	28	31.40
28.65	0	1	3	4	5	7	8	9	11	12	14	15	16	18	19	20	22	23	25	26	27	31.35
28.70	0	1	3	4	5	6	8	9	10	12	13	14	16	17	18	20	21	22	24	25	26	31.30
28.75	0	1	2	4	5	6	7	9	10	11	13	14	15	16	18	19	20	21	23	24	25	31.25
28.80	0	1	2	4	5	6	7	8	10	11	12	13	14	16	17	18	19	21	22	23	24	31.20
28 85	0	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	31.15
28.90	0	1	2	3	4	5	7	8	9	10	11	12	13	14	16	17	18	19	20	21	22	31.10
28.95	0	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	31.05
29.00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	31.00
29.05	0	1	2	3	4	5	6	7	8	9	10	11	11	12	13	14	15	16	17	18	19	30.95
29.10	0	1	2	3	4	4	5	6	7	8	9	10	11	12	13	14	15	15	16	17	18	30.90
29.15	0	1	2	3	3	4	5	6	7	8	9	9	10	11	12	13	14	15	15	16	17	30.85
29.20	0	1	2	2	3	4	5	6	6	7	8	9	10	10	11	12	13	14	15	15	16	30.80
29.25	0	1	1	2	3	4	4	5	6	7	8	8	9	10	11	11	12	13	14	14	15	30.75
29.30	0	1	1	2	3	3	4	5	6	6	7	8	8	9	10	11	11	12	13	13	14	30.70
29.35	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	10	11	12	13	13	30.65
29.40	0	1	1	2	2	3	4	4	5	5	6	7	7	8	8	9	10	10	11	12	12	30.60
29.45	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	11	11	30.55
29.50	0	0	1	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	9	10	10	30.50
29.55	0	0	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	30.45
29.60	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8	30.40
29.65	0	0	1	1	1	2	2	2	3	3	4	4	4	5	5	5	6	6	6	7	7	30.35
29.70	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	5	6	6	30.30
29.75	0	0	0	1	1	1	1	2	2	2	3	3	3	3	4	4	4	4	5	5	5	30.25
29.80	0	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	30.20
29.85	0	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	30.15
29.90	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	30.10
29.95	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	30.05
30.00	0	0	0	0	0	0	0	0	00	0	0	0	0	0	0	0	0	0	0	0	0	30.00
Subtract.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Add.
	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	
Barometer.							MEAN	REFRACTION.														Barometer.

TABLE III. B.

Correction of the Mean Refraction for the Height of the Thermometer.

Thermom.	MEAN REFRACTION.																					Thermom.
Add.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Add.
	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	
—10°	0″	4	8″	12″	16″	20″	24″	28″	33″	37″	41″	46″	50″	55″	60″	65″	70″	75″	80″	85″	90″	—10°
— 8	0	4	8	12	15	19	23	27	31	36	40	44	48	53	58	62	67	72	77	82	87	— 8
— 6	0	4	7	11	15	19	22	26	30	34	38	42	47	51	55	60	64	69	74	79	84	— 6
— 4	0	4	7	11	14	18	22	25	29	33	37	41	45	49	53	57	62	66	71	76	80	— 4
— 2	0	3	7	10	14	17	21	24	28	31	35	39	43	47	51	55	59	64	68	72	77	— 2
0	0	3	7	10	13	16	20	23	27	30	34	37	41	45	49	53	57	61	65	69	74	0
2	0	3	6	9	12	16	19	22	25	29	32	36	39	43	47	50	54	58	62	66	70	2
4	0	3	6	9	12	15	18	21	24	28	31	34	37	41	44	48	52	55	59	63	67	4
6	0	3	6	8	11	14	17	20	23	26	29	32	36	39	42	46	49	53	56	60	64	6
8	0	3	5	8	11	14	16	19	22	25	28	31	34	37	40	43	47	50	54	57	61	8
10	0	3	5	8	10	13	15	18	21	24	26	29	32	35	38	41	44	48	51	54	58	10
11	0	2	5	7	10	13	15	18	20	23	26	28	31	34	37	40	43	46	49	53	56	11
12	0	2	5	7	10	12	15	17	20	22	25	28	30	33	36	39	42	45	48	51	54	12
13	0	2	5	7	9	12	14	17	19	22	24	27	30	32	35	38	41	44	47	50	53	13
14	0	2	5	7	9	11	14	16	19	21	24	26	29	31	34	37	40	42	45	48	51	14
15	0	2	4	7	9	11	13	16	18	20	23	25	28	30	33	36	38	41	44	47	50	15
16	0	2	4	6	9	11	13	15	18	20	22	25	27	29	32	35	37	40	43	45	48	16
17	0	2	4	6	8	10	13	15	17	19	21	24	26	29	31	33	36	39	41	44	47	17
18	0	2	4	6	8	10	12	14	16	19	21	23	25	28	30	32	35	37	40	43	45	18
19	0	2	4	6	8	10	12	14	16	18	20	22	24	27	29	31	34	36	39	41	44	19
20	0	2	4	6	8	9	11	13	15	17	19	22	24	26	28	30	33	35	37	40	42	20
21	0	2	4	5	7	9	11	13	15	17	19	21	23	25	27	29	31	34	36	38	41	21
22	0	2	3	5	7	9	11	12	14	16	18	20	22	24	26	28	30	32	35	37	39	22
23	0	2	3	5	7	8	10	12	14	15	17	19	21	23	25	27	29	31	33	36	38	23
24	0	2	3	5	6	8	10	11	13	15	17	18	20	22	24	26	28	30	32	34	36	24
25	0	2	3	5	6	8	9	11	13	14	16	18	19	21	23	25	27	29	31	33	35	25
26	0	1	3	4	6	7	9	11	12	14	15	17	19	20	22	24	26	28	29	31	33	26
27	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	23	25	26	38	30	32	27
28	0	1	3	4	5	7	8	10	11	12	14	15	17	19	20	22	23	25	27	29	30	28
29	0	1	3	4	5	6	8	9	11	12	13	15	16	18	19	21	22	24	26	27	29	29
30	0	1	2	4	5	6	7	9	10	11	13	14	15	17	18	20	21	23	24	26	28	30
31	0	1	2	3	5	6	7	8	9	11	12	13	15	16	17	19	20	22	23	25	26	31
32	0	1	2	3	4	6	7	8	9	10	11	13	14	15	16	18	19	20	22	23	25	32
33	0	1	2	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	21	22	23	33
34	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	22	34
35	0	1	2	3	4	5	6	6	7	8	9	10	11	13	14	15	16	17	18	19	20	35
36	0	1	2	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	36
37	0	1	2	2	3	4	5	6	6	7	8	9	10	11	12	13	14	15	16	17	18	37
38	0	1	1	2	3	4	4	5	6	7	7	8	9	10	11	12	13	13	14	15	16	38
39	0	1	1	2	3	3	4	5	5	6	7	8	8	9	10	11	11	12	13	14	15	39
40	0	1	1	2	2	3	4	4	5	6	6	7	8	8	9	10	10	11	12	13	13	40
41	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	9	9	10	11	11	12	41
42	0	0	1	1	2	2	3	3	4	4	5	5	6	7	7	8	8	9	9	10	11	42
43	0	0	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	43
44	0	0	1	1	1	2	2	3	3	3	4	4	4	5	5	6	6	7	7	8	8	44
45	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	6	6	6	7	45
46	0	0	0	1	1	1	1	2	2	2	2	2	3	3	4	4	4	4	5	5	5	46
47	0	0	0	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	47
48	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	48
49	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	49
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
Add.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Add.
Thermom.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Thermom.
	MEAN REFRACTION.																					

TABLE III. B.

Correction of the Mean Refraction for the Height of the Thermometer.

Thermom.	MEAN REFRACTION.																					Thermom.
Subtract.	0′		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Subtract.
	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	
50°	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	50°
51	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	51
52	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	52
53	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	4	4	53
54	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	54
55	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	55
56	0	0	1	1	1	2	2	2	3	3	4	4	4	5	6	6	6	6	7	7	8	56
57	0	0	1	1	2	2	2	3	3	4	4	5	5	6	6	6	7	8	8	8	9	57
58	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	9	9	10	10	58
59	0	1	1	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11	12	59
60	0	1	1	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	60
61	0	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	11	12	12	13	14	61
62	0	1	1	2	3	3	4	5	6	6	7	8	9	9	10	11	12	13	14	15	15	62
63	0	1	1	2	3	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	17	63
64	0	1	2	2	3	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	64
65	0	1	2	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	65
66	0	1	2	3	4	5	6	6	7	8	9	10	11	12	14	15	16	17	18	19	20	66
67	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	20	22	67
68	0	1	2	3	4	5	6	7	8	9	11	11	13	14	15	16	18	19	20	22	23	68
69	0	1	2	3	4	5	7	8	9	10	11	12	13	15	16	17	19	20	21	23	24	69
70	0	1	2	3	5	6	7	8	9	10	12	12	14	16	17	18	20	21	22	24	25	70
71	0	1	2	4	5	6	7	8	10	11	12	13	15	16	18	19	20	22	23	25	27	71
72	0	1	2	4	5	6	8	9	10	11	13	14	16	17	18	20	21	23	25	26	28	72
73	0	1	3	4	5	7	8	9	11	12	13	14	16	18	19	21	22	24	26	27	29	73
74	0	1	3	4	5	7	8	10	11	12	14	15	17	18	20	22	23	25	27	28	30	74
75	0	1	3	4	6	7	8	10	11	13	14	16	18	19	21	22	24	26	28	29	31	75
76	0	1	3	4	6	7	9	10	12	13	15	16	18	20	22	23	25	27	29	31	32	76
77	0	1	3	5	6	8	9	11	12	14	16	17	19	21	22	24	26	28	30	32	34	77
78	0	2	3	5	6	8	9	11	13	14	16	18	20	21	23	25	27	29	31	33	35	78
79	0	2	3	5	6	8	10	11	13	15	17	18	20	22	24	26	28	30	32	34	36	79
80	0	2	3	5	7	8	10	12	14	15	17	19	21	23	25	27	29	31	33	35	37	80
81	0	2	3	5	7	9	10	12	14	16	18	20	21	24	26	28	30	32	34	36	38	81
82	0	2	4	5	7	9	11	13	14	16	18	20	22	24	26	28	31	33	35	37	40	82
83	0	2	4	5	7	9	11	13	15	17	19	21	23	25	27	29	31	34	36	38	41	83
84	0	2	4	6	8	9	11	13	15	17	19	21	23	26	28	30	32	35	37	39	42	84
85	0	2	4	6	8	10	12	14	16	18	20	22	24	26	29	31	33	36	38	40	43	85
86	0	2	4	6	8	10	12	14	16	18	20	23	25	27	29	32	34	37	39	42	44	86
87	0	2	4	6	8	10	12	14	17	19	21	23	25	28	30	32	35	38	40	43	45	87
88	0	2	4	6	8	10	13	15	17	19	21	24	26	28	31	33	36	38	41	44	46	88
89	0	2	4	6	9	11	13	15	17	20	22	24	27	29	32	34	37	39	42	45	48	89
90	0	2	4	7	9	11	13	16	18	20	23	25	27	30	32	35	38	40	43	46	49	90
91	0	2	4	7	9	11	14	16	18	21	23	25	28	31	33	36	39	41	44	47	50	91
92	0	2	5	7	9	11	14	16	19	21	24	26	29	31	34	37	39	42	45	48	51	92
93	0	2	5	7	9	12	14	17	19	22	24	27	29	32	35	37	40	43	46	49	52	93
94	0	2	5	7	10	12	14	17	19	22	25	27	30	33	35	38	41	44	47	50	53	94
95	0	2	5	7	10	12	15	17	20	22	25	28	30	33	36	39	42	45	48	51	54	95
96	0	2	5	7	10	12	15	18	20	23	26	28	31	34	37	40	43	46	49	52	55	96
97	0	3	5	8	10	13	15	18	21	23	26	29	32	35	38	41	44	47	50	53	56	97
98	0	3	5	8	10	13	16	18	21	24	27	29	32	35	38	41	44	48	51	54	58	98
99	0	3	5	8	11	13	16	19	21	24	27	30	33	36	39	42	45	49	52	55	59	99
100	0	3	5	8	11	13	16	19	22	25	28	31	34	37	40	43	46	50	53	56	60	100
Subtract.	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	30″	0″	Subtract.
Thermom.	0		1′		2′		3′		4′		5′		6′		7′		8′		9′		10′	Thermom
	MEAN REFRACTION.																					

TABLE IV. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	0 00.000	0 09.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 08.807		
1	0 00.164	0 09.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 08.971	1	0.003
2	0 00.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 09.135	2	.005
3	0 00.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 09.298	3	.008
4	0 00.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 09.462	4	.011
5	0 00.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 09.626	5	.014
6	0 00.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 09.790	6	.016
7	0 01.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 00.124	1 09.954	7	.019
8	0 01.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 00.288	1 10.118	8	.022
9	0 01.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 00.452	1 10.281	9	.025
10	0 01.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 00.616	1 10.445	10	.027
11	0 01.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 00.779	1 10.609	11	.030
12	0 01.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 00.943	1 10.773	12	.033
13	0 02.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 01.107	1 10.937	13	.035
14	0 02.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 01.271	1 11.100	14	.038
15	0 02.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 01.435	1 11.264	15	.041
16	0 02.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 01.599	1 11.428	16	.044
17	0 02.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 01.762	1 11.592	17	.046
18	0 02.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 01.926	1 11.756	18	.049
19	0 03.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 02.090	1 11.920	19	.052
20	0 03.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 02.254	1 12.083	20	.055
21	0 03.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 02.418	1 12.247	21	.057
22	0 03.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 02.582	1 12.411	22	.060
23	0 03.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 02.745	1 12.575	23	.063
24	0 03.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 02.909	1 12.739	24	.066
25	0 04.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 03.073	1 12.903	25	.068
26	0 04.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 03.237	1 13.066	26	.071
27	0 04.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 03.401	1 13.230	27	.074
28	0 04.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 03.564	1 13.394	28	.076
29	0 04.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 03.728	1 13.558	29	.079
30	0 04.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 03.892	1 13.722	30	.082
31	0 05.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 04.056	1 13.886	31	.085
32	0 05.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 04.220	1 14.049	32	.087
33	0 05.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 04.384	1 14.213	33	.090
34	0 05.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 04.547	1 14.377	34	.093
35	0 05.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 04.711	1 14.541	35	.096
36	0 05.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 04.875	1 14.705	36	.098
37	0 06.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 05.039	1 14.868	37	.101
38	0 06.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 05.203	1 15.032	38	.104
39	0 06.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 05.367	1 15.196	39	.106
40	0 06.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 05.530	1 15.360	40	.109
41	0 06.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 05.694	1 15.524	41	.112
42	0 06.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 05.858	1 15.688	42	.115
43	0 07.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 06.022	1 15.851	43	.117
44	0 07.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 06.186	1 16.015	44	.120
45	0 07.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 06.350	1 16.179	45	.123
46	0 07.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 06.513	1 16.343	46	.126
47	0 07.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 06.677	1 16.507	47	.128
48	0 07.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 06.841	1 16.671	48	.131
49	0 08.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 07.005	1 16.834	49	.134
50	0 08.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 07.169	1 16.998	50	.137
51	0 08.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 07.332	1 17.162	51	.139
52	0 08.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 07.496	1 17.326	52	.142
53	0 08.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 07.660	1 17.490	53	.145
54	0 08.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 07.824	1 17.654	54	.147
55	0 09.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 07.988	1 17.817	55	.150
56	0 09.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 08.152	1 17.981	56	.153
57	0 09.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 08.315	1 18.145	57	.156
58	0 09.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 08.479	1 18.309	58	158
59	0 09.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 08.643	1 18.473	59	.161

TABLE IV. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m s.	m. s.	m. s.	s.	s.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 07.784	2 17.614	2 27.443		
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 07.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 08.112	2 17.941	2 27.771	2	.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 08.276	2 18.105	2 27.935	3	.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 08.440	2 18.269	2 28.099	4	.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 08.603	2 18.433	2 28.263	5	.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 08.767	2 18.597	2 28.426	6	.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 08.931	2 18.761	2 28.590	7	.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 09.095	2 18.924	2 28.754	8	.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 09.259	2 19.088	2 28.918	9	.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 09.423	2 19.252	2 29.082	10	.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 09.586	2 19.416	2 29.245	11	.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 09.750	2 19.580	2 29.409	12	.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 00.084	2 09.914	2 19.744	2 29.573	13	.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 00.248	2 10.078	2 19.907	2 29.737	14	.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 00.412	2 10.242	2 20.071	2 29.901	15	.041
16	1 21.258	1 31.087	1 40 917	1 50.746	2 00.576	2 10.405	2 20.235	2 30.065	16	.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 00.740	2 10.569	2 20.399	2 30.228	17	.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 00.904	2 10.733	2 20.563	2 30.392	18	.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 01.067	2 10.897	2 20.727	2 30.556	19	.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 01.231	2 11.061	2 20.890	2 30.720	20	.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 01.395	2 11.225	2 21.054	2 30.884	21	.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 01.559	2 11.388	2 21.218	2 31.048	22	.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 01.723	2 11.552	2 21.382	2 31.211	23	.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 01.887	2 11.716	2 21.546	2 31.375	24	.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 02.050	2 11.880	2 21.709	2 31.539	25	.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 02.214	2 12.044	2 21.873	2 31.703	26	.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 02.378	2 12.208	2 22.037	2 31.867	27	.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 02.542	2 12.371	2 22.201	2 32.031	28	.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 02.706	2 12.535	2 22.365	2 32.194	29	.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 02.869	2 12.699	2 22.529	2 32.358	30	.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 03.033	2 12.863	2 22.692	2 32.522	31	.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 03.197	2 13.027	2 22.856	2 32.686	32	.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 03.361	2 13.191	2 23.020	2 32.850	33	.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 03.525	2 13.354	2 23.184	2 33.013	34	.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 03.689	2 13.518	2 23.348	2 33.177	35	.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 03.852	2 13.682	2 23.512	2 33.341	36	.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 04.016	2 13.846	2 23.675	2 33.505	37	.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 04.180	2 14.010	2 23.839	2 33.669	38	.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 04.344	2 14.173	2 24.003	2 33.833	39	.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 04.508	2 14.337	2 24.167	2 33.996	40	.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 04.672	2 14.501	2 24.331	2 34.160	41	.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 04.835	2 14.665	2 24.495	2 34.324	42	.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 04.999	2 14.829	2 24.658	2 34.488	43	.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 05.163	2 14.993	2 24.822	2 34.652	44	.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 05.327	2 15.156	2 24.986	2 34.816	45	.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 05.491	2 15.320	2 25.150	2 34.979	46	.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 05 655	2 15.484	2 25.314	2 35.143	47	.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 05.818	2 15.648	2 25.477	2 35.307	48	.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 05.982	2 15.812	2 25.641	2 35.471	49	.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 06.146	2 15.976	2 25.805	2 35.635	50	.137
51	1 26 992	1 36.821	1 46.651	1 56.480	2 06.310	2 16.139	2 25.969	2 35.798	51	.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 06.474	2 16.303	2 26.133	2 35.962	52	.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 06.637	2 16.467	2 26.297	2 36.126	53	.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 06.801	2 16.631	2 26.460	2 36.290	54	.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 06.965	2 16.795	2 26.624	2 36.454	55	.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 07.129	2 16.959	2 26.788	2 36.618	56	.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 07.293	2 17.122	2 26.952	2 36.781	57	.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 07.457	2 17.286	2 27.116	2 36.945	58	.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 07.620	2 17.450	2 27.280	2 37.109	59	.161

TABLE IV. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080		
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	2	.005
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	3	.008
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	4	.011
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	5	.014
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	6	.016
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	7	.019
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	8	.022
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	9	.025
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	10	.027
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	11	.030
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	12	.033
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	13	.035
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	14	.038
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	15	.041
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	16	.044
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	17	.046
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	18	.049
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	19	.052
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	.055
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	.057
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	.060
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	.063
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	.066
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	.068
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	.071
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	.074
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	.076
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	.079
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	.082
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	.085
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	.087
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	.090
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	.093
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	.096
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	.098
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	.101
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	.104
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	.106
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	.109
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	.112
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	.115
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	.117
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	.120
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	.123
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	.126
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	.128
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	.131
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	.134
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	.137
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	.139
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	.142
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	.145
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	.147
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	.150
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	.153
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	.156
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	.158
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	.161

TABLE IV. MEAN SOLAR INTO SIDEREAL TIME

Mean Solar.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	0 00.000	0 09.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 08.995		
1	0 00.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 09.160	1	0.003
2	0 00.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 09.324	2	.005
3	0 00.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 09.488	3	.008
4	0 00.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 09.652	4	.011
5	0 00.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 09.817	5	.014
6	0 00.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 00.124	1 09.981	6	.016
7	0 01.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 00.289	1 10.145	7	.019
8	0 01.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 00.453	1 10.310	8	.022
9	0 01.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 00.617	1 10.474	9	.025
10	0 01.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 00.782	1 10.638	10	.027
11	0 01.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 00.946	1 10.802	11	.030
12	0 01.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 01.110	1 10.967	12	.033
13	0 02.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 01.274	1 11.131	13	.036
14	0 02.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 01.439	1 11.295	14	.038
15	0 02.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 01.603	1 11.459	15	.041
16	0 02.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 01.767	1 11.624	16	.044
17	0 02.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 01.932	1 11.788	17	.047
18	0 02.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 02.096	1 11.952	18	.049
19	0 03.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 02.260	1 12.117	19	.052
20	0 03.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 02.424	1 12.281	20	.055
21	0 03.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 02.589	1 12.445	21	.057
22	0 03.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 02.753	1 12.609	22	.060
23	0 03.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 02.917	1 12.774	23	.063
24	0 03.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 03.081	1 12.938	24	.066
25	0 04.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 03.246	1 13.102	25	.068
26	0 04.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 03.410	1 13.266	26	.071
27	0 04.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 03.574	1 13.431	27	.074
28	0 04.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 03.739	1 13.595	28	.077
29	0 04.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 03.903	1 13.759	29	.079
30	0 04.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 04.067	1 13.924	30	.082
31	0 05.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 04.231	1 14.088	31	.085
32	0 05.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 04.396	1 14.252	32	.088
33	0 05.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 04.560	1 14.416	33	.090
34	0 05.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 04.724	1 14.581	34	.093
35	0 05.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 04.888	1 14.745	35	.096
36	0 05.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 05.053	1 14.909	36	.099
37	0 06.078	0 15.935	0 25.791	0 35 648	0 45.504	0 55.361	1 05.217	1 15.073	37	.101
38	0 06.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 05.381	1 15.238	38	.104
39	0 06.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 05.546	1 15.402	39	.107
40	0 06.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 05.710	1 15.566	40	.110
41	0 06.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 05.874	1 15.731	41	.112
42	0 06.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 06.038	1 15.895	42	.115
43	0 07.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 06.203	1 16.059	43	.118
44	0 07.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 06.367	1 16.223	44	.120
45	0 07.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 06.531	1 16.388	45	.123
46	0 07.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 06.695	1 16.552	46	.126
47	0 07.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 06.860	1 16.716	47	.129
48	0 07.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 07.024	1 16.881	48	.131
49	0 08.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 07.188	1 17.045	49	.134
50	0 08.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 07.353	1 17.209	50	.137
51	0 08.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 07.517	1 17.373	51	.140
52	0 08.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 07.681	1 17.538	52	.142
53	0 08.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 07.845	1 17.702	53	.145
54	0 08.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 08.010	1 17.866	54	.148
55	0 09.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 08.174	1 18.030	55	.151
56	0 09.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 08.338	1 18.195	56	.153
57	0 09.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 08.502	1 18.359	57	.156
58	0 09.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 08.667	1 18.523	58	159
59	0 09.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 08.831	1 18.688	59	.162

TABLE IV. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847		
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 08.463	2 18.319	2 28.176	2	.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	3	.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	4	.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	5	.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	6	.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	7	.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 09.448	2 19.305	2 29.161	8	.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	9	.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	10	.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	11	.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	12	.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	13	.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	14	.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	15	.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	16	.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	17	.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	18	.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	19	.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	20	.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	21	.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 01.892	2 11 748	2 21.605	2 31.461	22	.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	23	.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	24	.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	25	.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	26	.071
27	1 23.287	1 33.144	1 43 000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	27	.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	28	.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	29	.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	30	.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	31	.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	32	.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	33	.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	34	.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	35	.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	36	.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	37	.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	38	.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	39	.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	40	.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	41	.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	42	.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	43	.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	44	.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	45	.123
46	1 26.408	1 36.265	1 46.121	1 55 978	2 05.834	2 15.691	2 25.547	2 35.404	46	.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	47	.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	48	.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06 327	2 16.184	2 26.040	2 35.897	49	.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	50	.137
51	1 27 230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	51	.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	52	.142
53	1 27.558	1 37 415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	53	.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 07.149	2 17.005	2 26.861	2 36.718	54	.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	55	.151
56	1 28 051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	56	.153
57	1 28 215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	57	.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	58	.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	59	.162

TABLE IV. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	16$^{h.}$	17$^{h.}$	18$^{h.}$	19$^{h.}$	20$^{h.}$	21$^{h.}$	22$^{h.}$	23$^{h.}$	For Seconds.	
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.	s.
0	2 37.704	2 47.560	2 57.417	3 07.273	3 17.129	3 26.986	3 36.842	3 46.699		
1	2 37.868	2 47.724	2 57.581	3 07.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 07.602	3 17.458	3 27.315	3 37.171	3 47.027	2	.005
3	2 38.196	2 48.053	2 57.909	3 07.766	3 17.622	3 27.479	3 37.335	3 47.192	3	.008
4	2 38.361	2 48.217	2 58.074	3 07.930	3 17.787	3 27.643	3 37.500	3 47.356	4	.011
5	2 38.525	2 48.381	2 58.238	3 08.094	3 17.951	3 27.807	3 37.664	3 47.520	5	.014
6	2 38.689	2 48.546	2 58.402	3 08.259	3 18.115	3 27.972	3 37.828	3 47.685	6	.016
7	2 38.854	2 48.710	2 58.566	3 08.423	3 18.279	3 28.136	3 37.992	3 47.849	7	.019
8	2 39.018	2 48.874	2 58.731	3 08.587	3 18.444	3 28.300	3 38.157	3 48.013	8	.022
9	2 39.182	2 49.039	2 58.895	3 08.751	3 18.608	3 28.464	3 38.321	3 48.177	9	.025
10	2 39.346	2 49.203	2 59.059	3 08.916	3 18.772	3 28.629	3 38.485	3 48.342	10	.027
11	2 39.511	2 49.367	2 59.224	3 09.080	3 18.937	3 28.793	3 38.649	3 48.506	11	.030
12	2 39.675	2 49.531	2 59.388	3 09.244	3 19.101	3 28.957	3 38.814	3 48.670	12	.033
13	2 39.839	2 49.696	2 59.552	3 09.409	3 19.265	3 29.122	3 38.978	3 48.834	13	.036
14	2 40.003	2 49.860	2 59.716	3 09.573	3 19.429	3 29.286	3 39.142	3 48.999	14	.038
15	2 40.168	2 50.024	2 59.881	3 09.737	3 19.594	3 29.450	3 39.307	3 49.163	15	.041
16	2 40.332	2 50.188	3 00.045	3 09.901	3 19.758	3 29.614	3 39.471	3 49.327	16	.044
17	2 40.496	2 50.353	3 00.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	.047
18	2 40.661	2 50.517	3 00.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	.049
19	2 40.825	2 50.681	3 00.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	.052
20	2 40.989	2 50.846	3 00.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	.055
21	2 41.153	2 51.010	3 00.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	.057
22	2 41.318	2 51.174	3 01.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	.060
23	2 41.482	2 51.338	3 01.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	.063
24	2 41.646	2 51.503	3 01.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	.066
25	2 41.810	2 51.667	3 01.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	.068
26	2 41.975	2 51.831	3 01.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	.071
27	2 42.139	2 51.995	3 01.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	.074
28	2 42.303	2 52.160	3 02.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	.077
29	2 42.468	2 52.324	3 02.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	.079
30	2 42.632	2 52.488	3 02.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	.082
31	2 42.796	2 52.653	3 02.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	.085
32	2 42.960	2 52.817	3 02.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	.088
33	2 43.125	2 52.981	3 02.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	.090
34	2 43.289	2 53.145	3 03.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	.093
35	2 43.453	2 53.310	3 03.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	.096
36	2 43.617	2 53.474	3 03.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	.099
37	2 43.782	2 53.638	3 03.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	.101
38	2 43.946	2 53.803	3 03.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	.104
39	2 44.110	2 53.967	3 03.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	.107
40	2 44.275	2 54.131	3 03.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	.110
41	2 44.439	2 54.295	3 04.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	.112
42	2 44.603	2 54.460	3 04.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	.115
43	2 44.767	2 54.624	3 04.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	.118
44	2 44.932	2 54.788	3 04.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	.120
45	2 45.096	2 54.952	3 04.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	.123
46	2 45.260	2 55.117	3 04.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	.126
47	2 45.425	2 55.281	3 05.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	.129
48	2 45.589	2 55.445	3 05.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	.131
49	2 45.753	2 55.610	3 05.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	.134
50	2 45.917	2 55.774	3 05.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	.137
51	2 46.082	2 55.938	3 05.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	.140
52	2 46.246	2 56.102	3 05.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	.142
53	2 46.410	2 56.267	3 06.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	.145
54	2 46.574	2 56.431	3 06.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	.148
55	2 46.739	2 56.595	3 06.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	.151
56	2 46.903	2 56.759	3 06.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	.153
57	2 47.067	2 56.924	3 06.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	.156
58	2 47.232	2 57.088	3 06.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56 227	58	159
59	2 47.396	2 57.252	3 07.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	.162

LOGARITHMS

OF THE

LE VERRIER COEFFICIENTS

OF THE

PERTURBATIVE FUNCTION OF PLANETARY MOTION.

BY THE LATE

SEARS C. WALKER.

77 95

INTRODUCTION.

The following is an extract from the report of Mr. Walker to the Superintendent: —

> "In compliance with your invitation, I inclose you the coefficients of M. Le Verrier's series for the development of the disturbing force. The computations have been made to facilitate the study of the theory of Neptune. They were partly computed by M. de Pourtalès and myself, using the logarithmic tables of Dodson, Vega, and Zeck. Subsequently, a duplicate numerical computation has been made by several of my assistants, commencing with eighteen places of decimals, and retaining in the terms of a higher order all the decimals below that number whose accuracy could be relied on. H.
>
> "The computation by numbers confirmed in every instance the previous results by logarithms, as far as the latter could be depended upon."

To this it is only necessary to add, that the fundamental sheets of these laborious computations, or the "preliminary constants," were computed, one five times, and the other four times, by different assistants, who derived them from the formulas independently of each other. No one assistant had access to the work of the others till his own computations were completed. The first of the fundamental sheets was extended to twenty-four places of decimals, of which eighteen were retained. The remaining sheets were computed in duplicate, were also checked independently by varying the formulas and processes, and were further tested by means of algebraic differences.

The change from the natural numbers to logarithms was principally done by Professor Kendall after Mr. Walker's death.

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	a^0	a^2	a^4	a^6	a^8	a^{10}
$b_{\frac{1}{2}}^{(0)}$	+ 0.30103	+99.69897	+99.44909	+99.29073	+99.17475	+99.08323
$a^{-1} b_{\frac{1}{2}}^{(1)}$	+ 0.00000	+99.57403	+99.36991	+99.23274	+99.12899	+99.04544
$a^{-2} b_{\frac{1}{2}}^{(2)}$	+99.87506	+99.49485	+99.31192	+99.18698	+99.09120	+99.01326
$a^{-3} b_{\frac{1}{2}}^{(3)}$	+99.79588	+99.43685	+99.26616	+99.14919	+99.05902	+98.98523
$a^{-4} b_{\frac{1}{2}}^{(4)}$	+99.73789	+99.39110	+99.22837	+99.11701	+99.03099	+98.96041
$a^{-5} b_{\frac{1}{2}}^{(5)}$	+99.69213	+99.35331	+99.19619	+99.08898	+99.00616	+98.93813
$a^{-6} b_{\frac{1}{2}}^{(6)}$	+99.65434	+99.32113	+99.16816	+99.06416	+98.98389	+98.91793
$a^{-7} b_{\frac{1}{2}}^{(7)}$	+99.62216	+99.29310	+99.14334	+99.04188	+98.96368	+98.89944
$a^{-8} b_{\frac{1}{2}}^{(8)}$	+99.59413	+99.26828	+99.12106	+99.02168	+98.94520	+98.88241
$a^{-9} b_{\frac{1}{2}}^{(9)}$	+99.56931	+99.24600	+99.10086	+99.00319	+98.92817	+98.86661
	β^2	$a^2 \beta^2$	$a^4 \beta^2$	$a^6 \beta^2$	$a^8 \beta^2$	$a^{10} \beta^2$
$a^3 D_a b_{\frac{1}{2}}^{(0)}$		+ 0.00000	+99.09691	+98.67094	+98.38764	+98.17475
$a^2 D_a b_{\frac{1}{2}}^{(1)}$	+ 0.00000	—99.09691	+98.67094	+98.38764	+98.17475	+98.00405
$a^1 D_a b_{\frac{1}{2}}^{(2)}$	+ 0.17609	—99.39794	—98.29072		+97.50573	+97.54713
$D_a b_{\frac{1}{2}}^{(3)}$	+ 0.27800	—99.70570	—98.87619	—98.86307	—97.94507	—97.55387
$a^{-1} D_a b_{\frac{1}{2}}^{(4)}$	+ 0.33995	—99.85183	—99.09007	—98.64652	—98.81083	—98.03099
$a^{-2} D_a b_{\frac{1}{2}}^{(5)}$	+ 0.39110	—99.94539	—99.21791	—98.80498	—98.49882	—98.24920
$a^{-3} D_a b_{\frac{1}{2}}^{(6)}$	+ 0.43249	— 0.01336	—99.30734	—98.91289	—98.62346	—98.38965
$a^{-4} D_a b_{\frac{1}{2}}^{(7)}$	+ 0.46726	— 0.06640	—99.37529	—98.99357	—98.71544	—98.49196
$a^{-5} D_a b_{\frac{1}{2}}^{(8)}$	+ 0.49721	— 0.10971	—99.42963	—99.05789	—98.78759	—98.57162
$a^{-6} D_a b_{\frac{1}{2}}^{(9)}$	+ 0.52355	— 0.14622	—99.47470	—99.10981	—98.84650	—98.63634
	β^2	β^4	$a^2 \beta^4$	$a^4 \beta^4$	$a^6 \beta^4$	$a^8 \beta^4$
$a^4 D_a^2 b_{\frac{1}{2}}^{(0)}$		+ 0.00000	+ 0.13830	+99.03892	+98.48106	+98.09733
$a^3 D_a^2 b_{\frac{1}{2}}^{(1)}$		+ 0.35218	+99.27800	+98.72209	+98.34188	+98.04981
$a^2 D_a^2 b_{\frac{1}{2}}^{(2)}$	+ 0.17609	+ 0.85218	+99.18282	+98.76785	+98.45998	+98.21331
$a^1 D_a^2 b_{\frac{1}{2}}^{(3)}$	+ 0.57403	+ 0.23521	+99.75163	+99.06525	+98.70164	+98.43992
$D_a^2 b_{\frac{1}{2}}^{(4)}$	+ 0.81707	+99.91398	+ 0.10431	+99.38532	+98.93024	+98.64829
$a^{-1} D_a^2 b_{\frac{1}{2}}^{(5)}$	+ 0.99316	—99.56719	+ 0.34862	+99.54744	+99.12106	+98.82521
$a^{-2} D_a^2 b_{\frac{1}{2}}^{(6)}$	+ 1.13146	— 0.25640	+ 0.52243	+99.71634	+99.27912	+98.97459
$a^{-3} D_a^2 b_{\frac{1}{2}}^{(7)}$	+ 1.24541	— 0.53861	+ 0.66447	+99.85490	+99.41204	+99.10215
$a^{-4} D_a^2 b_{\frac{1}{2}}^{(8)}$	+ 1.34232	— 0.72446	+ 0.78200	+99.97162	+99.52585	+99.21265
$a^{-5} D_a^2 b_{\frac{1}{2}}^{(9)}$	+ 1.42664	— 0.86487	+ 0.88209	+ 0.07209	+99.62492	+99.30967
	β^2	β^4	β^6	$a^2 \beta^6$	$a^4 \beta^6$	$a^6 \beta^6$
$a^5 D_a^3 b_{\frac{1}{2}}^{(0)}$			+ 0.82930	+ 0.50345	+99.25921	+98.59716
$a^4 D_a^3 b_{\frac{1}{2}}^{(1)}$		+ 0.35218	+ 0.98057	+99.65434	+99.00464	+98.54430
$a^3 D_a^3 b_{\frac{1}{2}}^{(2)}$		+ 0.87506	+ 0.98270	+99.54600	+99.05509	+98.68183
$a^2 D_a^3 b_{\frac{1}{2}}^{(3)}$	+ 1.57403	+ 1.10231	+ 0.98665	+99.39624	+99.01762	+98.71071
$a^1 D_a^3 b_{\frac{1}{2}}^{(4)}$	+ 1.11810	+ 1.21501	+ 1.03783	—99.90930	—98.14953	+98.36064
$D_a^3 b_{\frac{1}{2}}^{(5)}$	+ 1.47028	+ 1.25144	+ 1.14507	— 0.53701	—99.49139	—98.74639
$a^{-1} D_a^3 b_{\frac{1}{2}}^{(6)}$	+ 1.73352	+ 1.21064	+ 1.28826	— 0.90932	—99.92456	—99.30286
$a^{-2} D_a^3 b_{\frac{1}{2}}^{(7)}$	+ 1.94438	+ 1.04129	+ 1.44309	— 1.18228	— 0.21868	—99.62992
$a^{-3} D_a^3 b_{\frac{1}{2}}^{(8)}$	+ 2.12047	+ 0.19619	+ 1.59467	— 1.39932	— 0.44640	—99.87245
$a^{-4} D_a^3 b_{\frac{1}{2}}^{(9)}$	+ 2.27174	+ 1.09758	+ 1.73673	— 1.57989	— 0.63356	— 0.06799

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF							
a^{12}	a^{14}	a^{16}	a^{18}	a^{20}	a^{22}	a^{24}	a^{26}
+99.00765	+98.94328	+98.88723	+98.83758	+98.79303	+98.75262	+98.71565	+98.68159
+98.97547	+98.91526	+98.86240	+98.81530	+98.77282	+98.73414	+98.69862	+98.66579
+98.94744	+98.89043	+98.84013	+98.79510	+98.75434	+98.71710	+98.68283	+98.65107
+98.92262	+98.86816	+98.81992	+98.77662	+98.73731	+98.70131	+98.66810	+98.63728
+98.90034	+98.84795	+98.80144	+98.75958	+98.72151	+98.68659	+98.65431	+98.62432
+98.88014	+98.82947	+98.78441	+98.74379	+98.70679	+98.67280	+98.64135	+98.61208
+98.86165	+98.81244	+98.76861	+98.72907	+98.69300	+98.65983	+98.62911	+98.60050
+98.84462	+98.79664	+98.75389	+98.71528	+98.68004	+98.64760	+98.61753	+98.58951
+98.82883	+98.78192	+98.74010	+98.70231	+98.66780	+98.63602	+98.60654	+98.57904
+98.81410	+98.76813	+98.72714	+98.69008	+98.65622	+98.62502	+98.59607	+98.56906
$a^{12}\ \beta^2$	$a^{14}\ \beta^2$	$a^{16}\ \beta^2$	$a^{18}\ \beta^2$	$a^{20}\ \beta^2$	$a^{22}\ \beta^2$	$a^{24}\ \beta^2$	$a^{26}\ \beta^2$
+98.00405	+97.86153	+97.78916	+97.63195	+97.53655	+97.45060	+97.37241	+97.30068
+97.86153	+97.78916	+97.63195	+97.53655	+97.45060	+97.37242	+97.30068	+97.23444
+97.50811	+97.44912	+97.38528	+97.32162	+97.25998	+97.20107	+97.14501	+97.09177
—97.12788	—96.47558	+96.32160	+96.66153	+96.75959	+96.79282	+96.79824	+96.78987
—97.78432	—97.55792	—97.34280	—97.13120	—96.91450	—96.68015	—96.40329	—96.00903
—98.03504	—97.84516	—97.67277	—97.51334	—97.36357	—97.22094	—97.08332	—96.94880
—98.19093	—98.01656	—97.86013	—97.71746	—97.58564	—97.46255	—97.34657	—97.23641
—98.30292	—98.13783	—97.99046	—97.85679	—97.73402	—97.62016	—97.51368	—97.41342
—98.38949	—98.23088	—98.08968	—97.96195	—97.84498	—97.73682	—97.63602	—97.54144
—98.45953	—98.30584	—98.16925	—98.04589	—97.93312	—97.82901	—97.73215	—97.64145
$a^{10}\ \beta^4$	$a^{12}\ \beta^4$	$a^{14}\ \beta^4$	$a^{16}\ \beta^4$	$a^{18}\ \beta^4$	$a^{20}\ \beta^4$	$a^{22}\ \beta^4$	$a^{24}\ \beta^4$
+97.80314	+97.56407	+97.36254	+97.18825	+97.03470	+96.89741	+96.77327	+96.66001
+97.81216	+97.61165	+97.43813	+97.28517	+97.14886	+97.02465	+96.91169	+96.80774
+98.00695	+97.82934	+97.67334	+97.53422	+97.40865	+97.29418	+97.18901	+97.09177
+98.23056	+98.05414	+97.90084	+97.76488	+97.64249	+97.53111	+97.42881	+97.33419
+98.42893	+98.24765	+98.09218	+97.95552	+97.83326	+97.72244	+97.62097	+97.52729
+98.59723	+98.41070	+98.25211	+98.11366	+97.99046	+97.87926	+97.77775	+97.68429
+98.74032	+98.54944	+98.38791	+98.24752	+98.12308	+98.01113	+97.90922	+97.81560
+98.86350	+98.66926	+98.50525	+98.36307	+98.23737	+98.12456	+98.02211	+97.92815
+98.97097	+98.77421	+98.60819	+98.46447	+98.33761	+98.22396	+98.12089	+98.02653
+99.06590	+98.86727	+98.69966	+98.55465	+98.42678	+98.31233	+98.20867	+98.11386
$a^{8}\ \beta^6$	$a^{10}\ \beta^6$	$a^{12}\ \beta^6$	$a^{14}\ \beta^6$	$a^{16}\ \beta^6$	$a^{18}\ \beta^6$	$a^{20}\ \beta^6$	$a^{22}\ \beta^6$
+98.18046	+97.76700	+97.46838	+97.21458	+96.99369	+96.79803	+96.62242	+96.46315
+98.18471	+97.88870	+97.63676	+97.41729	+97.22278	+97.04805	+96.88936	+96.74437
+98.37808	+98.12116	+97.89822	+97.70115	+97.52449	+97.36433	+97.21785	+97.08286
+98.45170	+98.22728	+98.02910	+97.85158	+97.69075	+97.54370	+97.40824	+97.28267
+98.29983	+98.16132	+98.01381	+97.87066	+97.73510	+97.60761	+97.48785	+97.37519
—97.92625	+98.40547	+97.68370	+97.67940	+97.61783	+97.53749	+97.45086	+97.36301
—98.80098	—98.34422	—97.87611	—97.27377	—96.56455	+97.08629	+97.16965	+97.17044
—99.17661	—98.79377	—98.45117	—98.12998	—97.81420	—97.48396	—97.09985	—96.50799
—99.43849	—99.08035	—98.76947	—98.49010	—98.23214	—97.98828	—97.75236	—97.51829
—99.64432	—99.29847	—99.00210	—98.73984	—98.50226	—98.28304	—98.07763	—97.88250

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	$a^2\,\beta^8$	$a^4\,\beta^8$
$a^6\,D_a^4\,b_{\frac{1}{2}}^{(0)}$			+ 0.82930	+ 1.69951	+ 1.01998	+99.66134
$a^5\,D_a^4\,b_{\frac{1}{2}}^{(1)}$			+ 1.44909	+ 1.77217	+ 0.17863	+99.44739
$a^4\,D_a^4\,b_{\frac{1}{2}}^{(2)}$		+ 0.87506	+ 1.76959	+ 1.77389	+ 0.05928	+99.50387
$a^3\,D_a^4\,b_{\frac{1}{2}}^{(3)}$		+ 1.51604	+ 1.95141	+ 1.77581	+99.92071	+99.48489
$a^2\,D_a^4\,b_{\frac{1}{2}}^{(4)}$	+ 1.11810	+ 1.87777	+ 2.07982	+ 1.77656	+99.83539	+99.46938
$a^1\,D_a^1\,b_{\frac{1}{2}}^{(5)}$	+ 1.77131	+ 2.11538	+ 2.19079	+ 1.75009	+ 0.57829	+99.75653
$D_a^4\,b_{\frac{1}{2}}^{(6)}$	+ 2.21064	+ 2.27759	+ 2.30301	+ 1.63832	+ 1.17899	+ 0.20188
$a^{-1}\,D_a^1\,b_{\frac{1}{2}}^{(7)}$	+ 2.54644	+ 2.38371	+ 2.42472	+ 1.15468	+ 1.61286	+ 0.59730
$a^{-2}\,D_a^1\,b_{\frac{1}{2}}^{(8)}$	+ 2.81944	+ 2.43923	+ 2.55656	— 1.60126	+ 1.94970	+ 0.92341
$a^{-3}\,D_a^1\,b_{\frac{1}{2}}^{(9)}$	+ 3.04989	+ 2.43786	+ 2.69491	— 2.11012	+ 2.22491	+ 1.19578
	β^2	β^4	β^6	β^8	β^{10}	$a^2\,\beta^{10}$
$a^7\,D_a^5\,b_{\frac{1}{2}}^{(0)}$				+ 2.14806	+ 2.64580	+ 1.64966
$a^6\,D_a^5\,b_{\frac{1}{2}}^{(1)}$			+ 1.44909	+ 2.53944	+ 2.68213	+ 0.81207
$a^5\,D_a^5\,b_{\frac{1}{2}}^{(2)}$			+ 2.16925	+ 2.77131	+ 2.68322	+ 0.68529
$a^4\,D_a^5\,b_{\frac{1}{2}}^{(3)}$		+ 1.51604	+ 2.60151	+ 2.92162	+ 2.68418	+ 0.55411
$a^3\,D_a^5\,b_{\frac{1}{2}}^{(4)}$		+ 2.24843	+ 2.89353	+ 3.03332	+ 2.68459	+ 0.46938
$a^2\,D_a^5\,b_{\frac{1}{2}}^{(5)}$	+ 1.77131	+ 2.70707	+ 3.11812	+ 3.12212	+ 2.68489	+ 0.39664
$a^1\,D_a^5\,b_{\frac{1}{2}}^{(6)}$	+ 2.51167	+ 3.03455	+ 3.29302	+ 3.19127	+ 2.69799	— 1.04532
$D_a^5\,b_{\frac{1}{2}}^{(7)}$	+ 3.02356	+ 3.28184	+ 3.45164	+ 3.23651	+ 2.75228	— 1.85484
$a^{-1}\,D_a^5\,b_{\frac{1}{2}}^{(8)}$	+ 3.42150	+ 3.47265	+ 3.60004	+ 3.24601	+ 2.87468	— 2.37819
$a^{-2}\,D_a^5\,b_{\frac{1}{2}}^{(9)}$	+ 3.74886	+ 3.61907	+ 3.74454	+ 3.19162	+ 3.06111	— 2.78088
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^8\,D_a^6\,b_{\frac{1}{2}}^{(0)}$				+ 2.14806	+ 3.38955	+ 3.66717
$a^7\,D_a^6\,b_{\frac{1}{2}}^{(1)}$				+ 2.93517	+ 3.67157	+ 3.68563
$a^6\,D_a^6\,b_{\frac{1}{2}}^{(2)}$			+ 2.16925	+ 3.42452	+ 3.85845	+ 3.68626
$a^5\,D_a^5\,b_{\frac{1}{2}}^{(3)}$			+ 2.96859	+ 3.75864	+ 3.98130	+ 3.68674
$a^4\,D_a^6\,b_{\frac{1}{2}}^{(4)}$		+ 2.24843	+ 3.48522	+ 4.00407	+ 4.08005	+ 3.68697
$a^3\,D_a^6\,b_{\frac{1}{2}}^{(5)}$		+ 3.05574	+ 3.85900	+ 4.19682	+ 4.16047	+ 3.68712
$a^2\,D_a^5\,b_{\frac{1}{2}}^{(6)}$	+ 2.51167	+ 3.59086	+ 4.15071	+ 4.35515	+ 4.22831	+ 3.68723
$a^1\,D_a^5\,b_{\frac{1}{2}}^{(7)}$	+ 3.32459	+ 3.98970	+ 4.39144	+ 4.48807	+ 4.28879	+ 3.68070
$D_a^5\,b_{\frac{1}{2}}^{(8)}$	+ 3.89862	+ 4.30374	+ 4.59930	+ 4.59930	+ 4.34906	+ 3.64226
$a^{-1}\,D_a^5\,b_{\frac{1}{2}}^{(9)}$	+ 4.35092	+ 4.55842	+ 4.78579	+ 4.68900	+ 4.41913	+ 3.48543
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^9\,D_a^7\,b_{\frac{1}{2}}^{(0)}$					+ 3.78027	+ 4.63457
$a^8\,D_a^7\,b_{\frac{1}{2}}^{(1)}$				+ 2.93517	+ 4.32167	+ 4.85240
$a^7\,D_a^7\,b_{\frac{1}{2}}^{(2)}$				+ 3.79250	+ 4.69728	+ 5.00214
$a^6\,D_a^7\,b_{\frac{1}{2}}^{(3)}$			+ 2.96859	+ 4.35776	+ 4.97213	+ 5.11332
$a^5\,D_a^7\,b_{\frac{1}{2}}^{(4)}$			+ 3.83389	+ 4.76875	+ 5.18440	+ 5.20180
$a^4\,D_a^7\,b_{\frac{1}{2}}^{(5)}$		+ 3.05574	+ 4.41882	+ 5.08648	+ 5.35633	+ 5.27529
$a^3\,D_a^7\,b_{\frac{1}{2}}^{(6)}$		+ 3.92665	+ 4.85846	+ 5.34403	+ 5.50046	+ 5.33812
$a^2\,D_a^7\,b_{\frac{1}{2}}^{(7)}$	+ 3.32459	+ 4.52530	+ 5.21006	+ 5.56006	+ 5.62441	+ 5.39301
$a^1\,D_a^7\,b_{\frac{1}{2}}^{(8)}$	+ 4.19965	+ 4.98379	+ 5.50877	+ 5.74543	+ 5.73349	+ 5.44098
$D_a^7\,b_{\frac{1}{2}}^{(9)}$	+ 4.82804	+ 5.35362	+ 5.75751	+ 5.90643	+ 5.83230	+ 5.48037

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF

$a^{6} \beta^{8}$	$a^{8} \beta^{8}$	$a^{10} \beta^{8}$	$a^{12} \beta^{8}$	$a^{14} \beta^{8}$	$a^{16} \beta^{8}$	$a^{18} \beta^{8}$	$a^{20} \beta^{8}$
+98.91374	+98.87685	+97.95344	+97.60236	+97.30185	+97.03890	+96.80496	+96.59417
+98.91892	+98.50062	+98.15297	+97.85493	+97.59381	+97.36148	+97.15054	+96.96336
+99.07376	+98.71951	+98.41726	+98.15322	+97.91858	+97.70731	+97.51512	+97.33878
+99.12729	+98.82284	+98.55724	+98.32145	+98.10928	+97.91637	+97.73945	+97.57603
+99.16008	+98.89182	+98.65330	+98.43948	+98.24528	+98.06734	+97.90310	+97.75056
+99.33542	+99.03424	+98.78856	+98.57594	+98.38629	+98.21406	+98.05578	+97.90906
+99.66023	+99.28690	+99.00069	+98.76560	+98.56362	+98.38486	+98.22344	+98.07561
+ 0.00394	+99.58236	+99.25805	+98.99513	+98.77349	+98.58105	+98.41017	+98.25585
+ 0.31039	+99.86510	+99.51735	+99.23368	+98.99479	+98.78852	+98.60679	+98.44404
+ 0.57506	+ 0.11861	+99.75805	+99.46142	+99.21040	+98.99334	+98.80230	+98.63170
$a^{4} \beta^{10}$	$a^{6} \beta^{10}$	$a^{8} \beta^{10}$	$a^{10} \beta^{10}$	$a^{12} \beta^{10}$	$a^{14} \beta^{10}$	$a^{16} \beta^{10}$	$a^{18} \beta^{10}$
+ 0.19669	+99.37685	+98.77939	+98.30381	+97.90549	+97.56291	+97.26164	+96.99255
+ 0.01152	+99.42386	+98.95870	+98.55982	+98.22005	+97.92180	+97.64486	+97.44004
+ 0.07376	+99.59332	+99.19378	+98.85044	+98.54882	+98.27956	+98.03623	+97.81415
+ 0.06789	+99.66498	+99.31944	+99.01627	+98.74586	+98.50164	+98.27886	+98.07399
+ 0.05898	+99.70908	+99.40306	+99.13064	+98.88492	+98.66098	+98.45518	+98.26474
+ 0.04204	+99.73293	+99.45834	+99.21100	+98.98580	+98.77901	+98.58777	+98.40986
+98.55011	+99.54849	+99.40495	+99.21550	+99.02517	+98.84279	+98.67014	+98.50713
— 0.66701	—99.75234	+97.21112	+98.92368	+98.90188	+98.79499	+98.66652	+98.53318
— 1.24557	— 0.49896	—99.87365	—99.25889	—98.42119	+98.22465	+98.41769	+98.40190
— 1.66247	— 0.94757	— 0.38461	—99.89888	—99.45008	—99.00316	—98.49938	—97.65118
$a^{2} \beta^{12}$	$a^{4} \beta^{12}$	$a^{6} \beta^{12}$	$a^{8} \beta^{12}$	$a^{10} \beta^{12}$	$a^{12} \beta^{12}$	$a^{14} \beta^{12}$	$a^{16} \beta^{12}$
+ 2.36955	+ 0.83645	+99.95426	+99.30363	+98.78068	+98.34078	+97.95995	+97.62359
+ 1.53358	+ 0.67279	+ 0.03288	+99.51630	+99.08060	+98.70544	+98.33182	+98.21630
+ 1.40142	+ 0.74016	+ 0.21459	+99.77399	+99.39307	+99.05683	+98.75550	+98.48228
+ 1.27545	+ 0.74417	+ 0.30027	+99.91720	+99.57946	+99.27701	+99.00293	+98.75221
+ 1.19165	+ 0.74097	+ 0.35395	+ 0.01360	+99.70930	+99.43885	+99.18205	+98.95007
+ 1.12122	+ 0.72966	+ 0.38635	+ 0.07996	+99.80295	+99.54995	+99.31701	+99.10109
+ 1.06300	+ 0.71578	+ 0.40675	+ 0.12782	+99.87338	+99.63931	+99.42247	+99.22045
+ 1.89288	+ 0.97933	+ 0.53422	+ 0.22133	+99.96193	+99.73217	+99.52269	+99.32882
+ 2.65574	+ 1.53632	+ 0.89649	+ 0.46486	+ 0.14300	+99.88209	+99.65780	+99.45769
+ 3.22522	+ 2.06553	+ 1.35052	+ 0.83338	+ 0.43808	+ 0.12303	+99.86184	+99.63752
β^{14}	$a^{2} \beta^{14}$	$a^{4} \beta^{14}$	$a^{6} \beta^{14}$	$a^{8} \beta^{14}$	$a^{10} \beta^{14}$	$a^{12} \beta^{14}$	$a^{14} \beta^{14}$
+ 4.75716	+ 3.16434	+ 1.56168	+ 0.62474	+99.92681	+99.36167	+98.88352	+98.46763
+ 4.76659	+ 2.32877	+ 1.41477	+ 0.72810	+ 0.16955	+99.70035	+99.18798	+99.29064
+ 4.76694	+ 2.19251	+ 1.48662	+ 0.92012	+ 0.44198	+ 0.02645	+99.65813	+99.32691
+ 4.76719	+ 2.07041	+ 1.49835	+ 1.01703	+ 0.59948	+ 0.22967	+99.89738	+99.59537
+ 4.76730	+ 1.98761	+ 1.50008	+ 1.07884	+ 0.70667	+ 0.37268	+ 0.06939	+99.79142
+ 4.76738	+ 1.91897	+ 1.49340	+ 1.11840	+ 0.78241	+ 0.47763	+ 0.19851	+99.94090
+ 4.76744	+ 1.86190	+ 1.48323	+ 1.14473	+ 0.83814	+ 0.55765	+ 0.29897	+ 0.05882
+ 4.76748	+ 1.81216	+ 1.47070	+ 1.16201	+ 0.87993	+ 0.62002	+ 0.37892	+ 0.15394
+ 4.77079	— 2.55041	+ 0.63373	+ 1.04352	+ 0.86015	+ 0.64287	+ 0.42773	+ 0.22153
+ 4.79162	— 3.48602	— 2.19190	— 1.14023	+ 0.24179	+ 0.48065	+ 0.37751	+ 0.22384

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	$a^2\,\beta^4$	$a^4\,\beta^4$	$a^6\,\beta^4$	$a^8\,\beta^4$
$a^2\, b_{\frac{3}{2}}^{(0)}$	+ 0.30103	+ 0.39794	+98.49485	+97.89279	+97.48456	+97.17476
$a^1\, b_{\frac{3}{2}}^{(1)}$	+ 0.47712	+ 0.41913	−98.67094	−98.16579	−97.80677	−97.52693
$b_{\frac{3}{2}}^{(2)}$	+ 0.57403	+ 0.44909	−99.16579	−98.70986	−98.38080	−98.12116
$a^{-1}\, b_{\frac{3}{2}}^{(3)}$	+ 0.64098	+ 0.47825	−99.37887	−98.95290	−98.64404	−98.39896
$a^{-2}\, b_{\frac{3}{2}}^{(4)}$	+ 0.69213	+ 0.50504	−99.50920	−99.10343	−98.80914	−98.57506
$a^{-3}\, b_{\frac{3}{2}}^{(5)}$	+ 0.73352	+ 0.52940	−99.60076	−99.20955	−98.92625	−98.70077
$a^{-4}\, b_{\frac{3}{2}}^{(6)}$	+ 0.76828	+ 0.55158	−99.67028	−99.29007	−99.01537	−98.79680
$a^{-5}\, b_{\frac{3}{2}}^{(7)}$	+ 0.79825	+ 0.57185	−99.72580	−99.35419	−99.08640	−98.87351
$a^{-6}\, b_{\frac{3}{2}}^{(8)}$	+ 0.82458	+ 0.59049	−99.77173	−99.40703	−99.14491	−98.93677
$a^{-7}\, b_{\frac{3}{2}}^{(9)}$	+ 0.84806	+ 0.60773	−99.81072	−99.45170	−99.19433	−98.99021
	β^2	β^4	β^6	$a^2\,\beta^6$	$a^4\,\beta^6$	$a^6\,\beta^6$
$a^3\, D_a\, b_{\frac{3}{2}}^{(0)}$		+ 0.95424	+ 1.00540	+98.67093	+97.94394	+97.43880
$a^2\, D_a\, b_{\frac{3}{2}}^{(1)}$	+ 0.47712	+ 1.14223	+ 1.01139	−98.74558	−98.18776	−97.69607
$a^1\, D_a\, b_{\frac{3}{2}}^{(2)}$	+ 0.87506	+ 1.27300	+ 1.01582	−99.06888	−98.54713	−98.15895
$D_a\, b_{\frac{3}{2}}^{(3)}$	+ 1.11810	+ 1.37638	+ 1.01521	−98.95290	−98.55689	−98.23926
$a^{-1}\, D_a\, b_{\frac{3}{2}}^{(4)}$	+ 1.29419	+ 1.46298	+ 1.00915	+98.36307	−98.07540	−98.03099
$a^{-2}\, D_a\, b_{\frac{3}{2}}^{(5)}$	+ 1.43249	+ 1.53800	+ 0.99765	+99.32606	+98.56970	+97.80131
$a^{-3}\, D_a\, b_{\frac{3}{2}}^{(6)}$	+ 1.54644	+ 1.60443	+ 0.98063	+99.67028	+99.04019	+98.53028
$a^{-4}\, D_a\, b_{\frac{3}{2}}^{(7)}$	+ 1.64335	+ 1.66417	+ 0.95782	+99.89459	+99.31007	+98.85541
$a^{-5}\, D_a\, b_{\frac{3}{2}}^{(8)}$	+ 1.72767	+ 1.71852	+ 0.92867	+ 0.06277	+99.50394	+99.07629
$a^{-6}\, D_a\, b_{\frac{3}{2}}^{(9)}$	+ 1.80230	+ 1.76844	+ 0.89225	+ 0.19766	+99.65608	+99.24548
	β^2	β^4	β^8	β^8	$a^2\,\beta^8$	$a^4\,\beta^8$
$a^4\, D_a^2\, b_{\frac{3}{2}}^{(0)}$		+ 0.95424	+ 1.82200	+ 1.78522	+99.08502	+98.20222
$a^3\, D_a^2\, b_{\frac{3}{2}}^{(1)}$		+ 1.52827	+ 1.98481	+ 1.78718	−99.04085	−98.84638
$a^2\, D_a^2\, b_{\frac{3}{2}}^{(2)}$	+ 0.87506	+ 1.85278	+ 2.10331	+ 1.78821	−99.30112	−98.72322
$a^1\, D_a^2\, b_{\frac{3}{2}}^{(3)}$	+ 1.41913	+ 2.08424	+ 2.19671	+ 1.78832	−99.25779	−98.80609
$D_a^2\, b_{\frac{3}{2}}^{(4)}$	+ 1.77131	+ 2.26616	+ 2.27334	+ 1.78877	−99.30258	−98.90382
$a^{-1}\, D_a^2\, b_{\frac{3}{2}}^{(5)}$	+ 2.03455	+ 2.41702	+ 2.33771	+ 1.79095	−99.60414	−99.12765
$a^{-2}\, D_a^2\, b_{\frac{3}{2}}^{(6)}$	+ 2.24541	+ 2.54644	+ 2.39261	+ 1.79609	−99.96101	−99.41378
$a^{-3}\, D_a^2\, b_{\frac{3}{2}}^{(7)}$	+ 2.42150	+ 2.66008	+ 2.43987	+ 1.80523	− 0.26672	−99.68732
$a^{-4}\, D_a^2\, b_{\frac{3}{2}}^{(8)}$	+ 2.57277	+ 2.76159	+ 2.48080	+ 1.81910	− 0.51877	−99.92710
$a^{-5}\, D_a^2\, b_{\frac{3}{2}}^{(9)}$	+ 2.70539	+ 2.85345	+ 2.51631	+ 1.83813	− 0.72944	− 0.13418
	β^2	β^4	β^6	β^8	β^{10}	$a^2\,\beta^{10}$
$a^5\, D_a^3\, b_{\frac{3}{2}}^{(0)}$			+ 2.22724	+ 2.80766	+ 2.68889	+99.53686
$a^4\, D_a^3\, b_{\frac{3}{2}}^{(1)}$		+ 1.52827	+ 2.62807	+ 2.94727	+ 2.68958	−99.49091
$a^3\, D_a^3\, b_{\frac{3}{2}}^{(2)}$		+ 2.19728	+ 2.89896	+ 3.05291	+ 2.68989	−99.72322
$a^2\, D_a^3\, b_{\frac{3}{2}}^{(3)}$	+ 1.41913	+ 2.61984	+ 3.10452	+ 3.13790	+ 2.68996	−99.71834
$a^1\, D_a^3\, b_{\frac{3}{2}}^{(4)}$	+ 2.07234	+ 2.93268	+ 3.27047	+ 3.20891	+ 2.69009	−99.74932
$D_a^3\, b_{\frac{3}{2}}^{(5)}$	+ 2.51167	+ 3.18262	+ 3.40965	+ 3.26996	+ 2.69014	−99.73112
$a^{-1}\, D_a^3\, b_{\frac{3}{2}}^{(6)}$	+ 2.84747	+ 3.39153	+ 3.52933	+ 3.32366	+ 2.68955	+98.42477
$a^{-2}\, D_a^3\, b_{\frac{3}{2}}^{(7)}$	+ 3.12047	+ 3.57149	+ 3.63415	+ 3.37191	+ 2.68740	+ 0.28757
$a^{-3}\, D_a^3\, b_{\frac{3}{2}}^{(8)}$	+ 3.35092	+ 3.72983	+ 3.72719	+ 3.41606	+ 2.68236	+ 0.79822
$a^{-4}\, D_a^3\, b_{\frac{3}{2}}^{(9)}$	+ 3.55049	+ 3.87141	+ 3.81064	+ 3.45720	+ 2.67268	+ 1.15807

LOGARITHM OF THE COEFFICIENT OF

$a^{10}\beta^4$	$a^{12}\beta^4$	$a^{14}\beta^4$	$a^{16}\beta^4$	$a^{18}\beta^4$	$a^{20}\beta^4$	$a^{22}\beta^4$
+96.92485	+96.71542	+96.53504	+96.37676	+96.23553	+96.10823	+95.99211
—97.29726	—97.10233	—96.93298	—96.78319	—96.64895	—96.52737	—96.41614
—97.90605	—97.72213	—97.56188	—97.41852	—97.28995	—97.17304	—97.06584
—98.19484	—98.01953	—97.86568	—97.72851	—97.60468	—97.49178	—97.38805
—98.37954	—98.21113	—98.06296	—97.93054	—97.81074	—97.70131	—97.60057
—98.51216	—98.34948	—98.20601	—98.07761	—97.96127	—97.85485	—97.75674
—98.61387	—98.45589	—98.31649	—98.19155	—98.07822	—97.97444	—97.87865
—98.69532	—98.54137	—98.40544	—98.28350	—98.17280	—98.07134	—97.97764
—98.76261	—98.61212	—98.47919	—98.35989	—98.25152	—98.15214	—98.06029
—98.81952	—98.67208	—98.54178	—98.42476	—98.31847	—98.22094	—98.13076
$a^{8}\beta^6$	$a^{10}\beta^6$	$a^{12}\beta^6$	$a^{14}\beta^6$	$a^{16}\beta^6$	$a^{18}\beta^6$	$a^{20}\beta^6$
+97.04980	+96.73296	+96.46553	+96.23401	+96.02979	+95.84757	+95.68215
—97.34694	—97.05759	—96.81030	—96.59417	—96.40226	—96.22943	—96.07262
—97.84646	—97.58383	—97.35687	—97.15679	—96.97782	—96.81584	—96.66792
—97.97299	—97.74332	—97.54117	—97.36054	—97.19720	—97.04809	—96.91094
—97.87609	—97.71053	—97.55108	—97.40131	—97.26152	—97.13107	—97.00907
—96.75626	—97.30803	—97.32141	—97.25945	—97.17453	—97.08217	—96.98847
+98.06980	+98.60907	+97.05987		—96.64068	—96.76057	—96.77034
+98.46926	+98.12322	+97.79964	+97.48386	+97.15857	+96.79260	+96.28735
+98.72006	+98.40887	+98.12816	+97.86853	+97.62313	+97.38621	+97.15214
+98.90667	+98.61384	+98.35307	+98.11576	+97.89613	+97.68996	+97.49395
$a^{6}\beta^8$	$a^{8}\beta^8$	$a^{10}\beta^8$	$a^{12}\beta^8$	$a^{14}\beta^8$	$a^{16}\beta^8$	$a^{18}\beta^8$
+97.61247	+97.15287	+96.77589	+96.45484	+96.17609	+95.92942	+95.70757
—97.83310	—97.42280	—97.08001	—96.78519	—96.52634	—96.29557	—96.08707
—98.28304	—97.92320	—97.61744	—97.35100	—97.11461	—96.90206	—96.70885
—98.43883	—98.12790	—97.85765	—97.61834	—97.40345	—97.20833	—97.02963
—98.57506	—98.29299	—98.04528	—97.82408	—97.62408	—97.44144	—97.27333
—98.77640	—98.48968	—97.24881	—98.02688	—97.83196	—97.65454	—97.49149
—99.92641	—98.71553	—98.45851	—98.23598	—98.03859	—97.86052	—97.69787
—99.27070	—98.94410	—98.67425	—98.44318	—98.24023	—98.05863	—97.89382
—99.49691	—99.15823	—98.87860	—98.64000	—98.43142	—98.24568	—98.07789
—99.69778	—99.35230	—99.06631	—98.82221	—98.60909	—98.41970	—98.24905
$a^{4}\beta^{10}$	$a^{6}\beta^{10}$	$a^{8}\beta^{10}$	$a^{10}\beta^{10}$	$a^{12}\beta^{10}$	$a^{14}\beta^{10}$	$a^{16}\beta^{10}$
+98.61246	+97.94788	+97.42487	+96.99229	+96.62284	+96.30016	+96.01368
—98.72181	—98.14575	—97.68104	—97.29012	—96.95211	—96.65408	—96.38739
—99.09524	—98.60804	—98.20498	—97.85953	—97.55653	—97.28639	—97.04226
—99.21783	—98.80634	—98.45509	—98.14786	—97.87441	—97.62783	—97.40315
—99.31324	—97.94744	—98.63055	—98.35021	—98.09846	—97.86977	—97.66013
—99.35321	—99.02801	—98.74162	—98.48526	—98.25295	—98.04038	—97.84438
—99.12238	—98.95830	—98.74352	—98.53008	—98.32742	—98.13707	—97.95858
—99.37421	+97.90466	—98.39374	—98.38191	—98.26737	—98.12833	—97.98417
+ 0.04614	+99.41624	+98.30595	+98.03936	—97.56317	—97.84050	—97.82668
+ 0.44466	+99.88008	+99.39161	+98.94079	+98.49552	+98.00626	+97.28341

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^6\, D_\alpha^4\, b_{\frac{3}{2}}^{(0)}$			+ 2.22724	+ 3.46821	+ 3.87968	+ 3.68910
$a^5\, D_\alpha^4\, b_{\frac{3}{2}}^{(1)}$			+ 2.99316	+ 3.78468	+ 4.00092	+ 3.68936
$a^4\, D_\alpha^4\, b_{\frac{3}{2}}^{(2)}$		+ 2.19728	+ 3.47817	+ 4.01713	+ 4.09566	+ 3.68946
$a^3\, D_\alpha^4\, b_{\frac{3}{2}}^{(3)}$		+ 2.94740	+ 3.82964	+ 4.20071	+ 4.17341	+ 3.68950
$a^2\, D_\alpha^4\, b_{\frac{3}{2}}^{(4)}$	+ 2.07284	+ 3.44801	+ 4.10539	+ 4.35236	+ 4.23932	+ 3.68954
$a^1\, D_\alpha^4\, b_{\frac{3}{2}}^{(5)}$	+ 2.81270	+ 3.82869	+ 4.33245	+ 4.48151	+ 4.29655	+ 3.68956
$D_\alpha^4\, b_{\frac{3}{2}}^{(6)}$	+ 3.32459	+ 4.13750	+ 4.52552	+ 4.59398	+ 4.34710	+ 3.68959
$a^{-1}\, D_\alpha^4\, b_{\frac{3}{2}}^{(7)}$	+ 3.72253	+ 4.39808	+ 4.69343	+ 4.69360	+ 4.39232	+ 3.68982
$a^{-2}\, D_\alpha^4\, b_{\frac{3}{2}}^{(8)}$	+ 4.04989	+ 4.62392	+ 4.84195	+ 4.78309	+ 4.43310	+ 3.69078
$a^{-3}\, D_\alpha^4\, b_{\frac{3}{2}}^{(9)}$	+ 4.32864	+ 4.82349	+ 4.97501	+ 4.86440	+ 4.47001	+ 3.69343
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^7\, D_\alpha^5\, b_{\frac{3}{2}}^{(0)}$				+ 3.83826	+ 4.73105	+ 5.02171
$a^6\, D_\alpha^5\, b_{\frac{3}{2}}^{(1)}$			+ 2.99316	+ 4.38343	+ 4.99490	+ 5.12855
$a^5\, D_\alpha^5\, b_{\frac{3}{2}}^{(2)}$			+ 3.82246	+ 4.77563	+ 5.19867	+ 5.21425
$a^4\, D_\alpha^5\, b_{\frac{3}{2}}^{(3)}$		+ 2.94740	+ 4.37675	+ 5.07884	+ 5.36427	+ 5.28580
$a^3\, D_\alpha^5\, b_{\frac{3}{2}}^{(4)}$		+ 3.76695	+ 4.79384	+ 5.32538	+ 5.50363	+ 5.34721
$a^2\, D_\alpha^5\, b_{\frac{3}{2}}^{(5)}$	+ 2.81270	+ 4.33286	+ 5.12861	+ 5.53293	+ 5.62886	+ 5.40100
$a^1\, D_\alpha^5\, b_{\frac{3}{2}}^{(6)}$	+ 3.62562	+ 4.77175	+ 5.40844	+ 5.71208	+ 5.72955	+ 5.44886
$D_\alpha^5\, b_{\frac{3}{2}}^{(7)}$	+ 4.19965	+ 5.13225	+ 5.64894	+ 5.86963	+ 5.82383	+ 5.49196
$a^{-1}\, D_\alpha^5\, b_{\frac{3}{2}}^{(8)}$	+ 4.65195	+ 5.43905	+ 5.85987	+ 6.01023	+ 5.90890	+ 5.53119
$a^{-2}\, D_\alpha^5\, b_{\frac{3}{2}}^{(9)}$	+ 5.02761	+ 5.70658	+ 6.04770	+ 6.18718	+ 5.98638	+ 5.56723
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^8\, D_\alpha^6\, b_{\frac{3}{2}}^{(0)}$				+ 3.83826	+ 5.33571	+ 6.02693
$a^7\, D_\alpha^6\, b_{\frac{3}{2}}^{(1)}$				+ 4.73451	+ 5.76994	+ 6.25407
$a^6\, D_\alpha^6\, b_{\frac{3}{2}}^{(2)}$			+ 3.82246	+ 5.34010	+ 6.10286	+ 6.43560
$a^5\, D_\alpha^6\, b_{\frac{3}{2}}^{(3)}$			+ 4.70896	+ 5.79413	+ 6.37058	+ 6.58640
$a^4\, D_\alpha^6\, b_{\frac{3}{2}}^{(4)}$		+ 3.76695	+ 5.32224	+ 6.15561	+ 6.59878	+ 6.71523
$a^3\, D_\alpha^6\, b_{\frac{3}{2}}^{(5)}$		+ 4.64681	+ 5.79515	+ 6.45540	+ 6.78489	+ 6.82760
$a^2\, D_\alpha^6\, b_{\frac{3}{2}}^{(6)}$	+ 3.62562	+ 5.26907	+ 6.18101	+ 6.71129	+ 6.95186	+ 6.92721
$a^1\, D_\alpha^6\, b_{\frac{3}{2}}^{(7)}$	+ 4.50068	+ 5.75896	+ 6.50731	+ 6.93445	+ 7.10006	+ 7.01664
$D_\alpha^6\, b_{\frac{3}{2}}^{(8)}$	+ 5.12907	+ 6.16550	+ 6.79020	+ 7.13225	+ 7.23323	+ 7.09777
$a^{-1}\, D_\alpha^6\, b_{\frac{3}{2}}^{(9)}$	+ 5.62967	+ 6.51404	+ 7.03997	+ 7.30987	+ 7.35413	+ 7.17201
	β^2	β^4	β^6	β^8	$a^2\,\beta^8$	$a^4\,\beta^8$
$a^2\, b_{\frac{5}{2}}^{(0)}$	+ 0.30103	+ 1.02119	+ 1.18416	+ 0.83181	+97.04085	+96.43880
$a^1\, b_{\frac{5}{2}}^{(1)}$	+ 0.69897	+ 1.22724	+ 1.27119	+ 0.83200	—96.96167	—96.42656
$b_{\frac{5}{2}}^{(2)}$	+ 0.94201	+ 1.38134	+ 1.34400	+ 0.83153	+97.56091	+97.07977
$a^{-1}\, b_{\frac{5}{2}}^{(3)}$	+ 1.11810	+ 1.50504	+ 1.40709	+ 0.82961	+98.33504	+97.87129
$a^{-2}\, b_{\frac{5}{2}}^{(4)}$	+ 1.25616	+ 1.60858	+ 1.46306	+ 0.82589	+98.73659	+98.29423
$a^{-3}\, b_{\frac{5}{2}}^{(5)}$	+ 1.37035	+ 1.69770	+ 1.51356	+ 0.82019	+99.01023	+98.58426
$a^{-4}\, b_{\frac{5}{2}}^{(6)}$	+ 1.46725	+ 1.77597	+ 1.55968	+ 0.81243	+99.21628	+98.80328
$a^{-5}\, b_{\frac{5}{2}}^{(7)}$	+ 1.55158	+ 1.84577	+ 1.60228	+ 0.80254	+99.38052	+98.97803
$a^{-6}\, b_{\frac{5}{2}}^{(8)}$	+ 1.62621	+ 1.90876	+ 1.64176	+ 0.79042	+99.51642	+99.12264
$a^{-7}\, b_{\frac{5}{2}}^{(9)}$	+ 1.69316	+ 1.96616	+ 1.67873	+ 0.77596	+99.63194	+99.24548

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF

$a^2 \beta^{12}$	$a^4 \beta^{12}$	$a^6 \beta^{12}$	$a^8 \beta^{12}$	$a^{10} \beta^{12}$	$a^{12} \beta^{12}$	$a^{14} \beta^{12}$
+ 0.14658	+99.14155	+98.41009	+97.82968	+97.34672	+96.93237	+96.56914
— 0.05932	—99.22493	—98.59322	—98.07973	—97.64525	—97.26781	—96.93374
— 0.27839	—99.60498	—99.07487	—98.63208	—98.24994	—97.91294	—97.61110
— 0.29701	—99.75288	—99.30139	—98.91832	—98.57204	—98.26696	—97.99085
— 0.32484	—99.85242	—99.45193	—99.10237	—98.79137	—98.51080	—98.25498
— 0.31819	—99.90550	—99.54766	—99.23064	—98.94551	—98.68612	—98.44501
— 0.31556	—99.94528	—99.61983	—99.32858	—99.06453	—98.82275	—98.59960
— 0.59863	— 0.10575	—99.74774	—99.45097	—99.19054	—98.95554	—98.74012
— 1.09739	— 0.45180	— 0.00154	—99.65496	—99.36878	—99.12106	—98.90001
— 1.55908	— 0.85108	— 0.83583	—99.93573	—99.61046	—99.33587	—99.09691

β^{14}	$a^2 \beta^{14}$	$a^4 \beta^{14}$	$a^6 \beta^{14}$	$a^8 \beta^{14}$	$a^{10} \beta^{14}$	$a^{12} \beta^{14}$
+ 4.76837	+ 0.84454	+99.76758	+98.97580	+98.84817	+97.81405	+97.35832
+ 4.76847	— 0.72306	—99.83083	—99.14932	—98.59179	—98.11764	—97.70406
+ 4.76850	— 0.93597	— 0.22099	—99.65145	—99.17199	—98.75579	—98.38703
+ 4.76852	— 0.97038	— 0.38675	—99.89869	—99.47669	—99.10384	—98.76927
+ 4.76853	— 0.99855	— 0.49216	— 0.05922	—99.67905	—99.33922	—99.03149
+ 4.76854	— 0.99941	— 0.55461	— 0.16640	—99.82077	—99.50864	—99.22378
+ 4.76855	— 0.99868	— 0.59926	— 0.24595	—99.92822	—99.63902	—99.37340
+ 4.76856	— 0.99039	— 0.62845	— 0.30445	— 0.01051	—99.74111	—99.49227
+ 4.76849	—99.94789	— 0.48999	— 0.28141	— 0.03831	—99.79981	—99.57295
+ 4.76807	+ 1.66567	+ 0.62071	—99.52457	—99.85027	—99.73994	—99.57341

β^{14}	β^{16}	$a^2 \beta^{16}$	$a^4 \beta^{16}$	$a^6 \beta^{16}$	$a^8 \beta^{16}$	$a^{10} \beta^{16}$
+ 6.22328	+ 5.91453	+ 1.61697	+ 0.47513	+99.62855	+98.94817	+98.37658
+ 6.31864	+ 5.91457	— 1.46643	— 0.52234	—99.79590	—99.19830	—98.68789
+ 6.39680	+ 5.91458	— 1.67679	— 0.92356	— 0.31762	—99.80413	—99.35650
+ 6.46301	+ 5.91459	— 1.72256	— 1.10281	— 0.58102	— 0.12756	—99.72526
+ 6.52045	+ 5.91459	— 1.75245	— 1.21426	— 0.75096	— 0.34206	—99.97510
+ 6.57118	+ 5.91460	— 1.75873	— 1.28404	— 0.86745	— 0.49494	— 0.15751
+ 6.61659	+ 5.91460	— 1.76037	— 1.33346	— 0.95885	— 0.61105	— 0.29816
+ 6.65771	+ 5.91460	— 1.75547	— 1.36762	— 1.01886	— 0.70128	— 0.40949
+ 6.69526	+ 5.91461	— 1.74860	— 1.39258	— 1.06965	— 0.77364	— 0.50003
+ 6.72982	+ 5.91464	— 2.00744	— 1.51075	— 1.15607	— 0.85742	— 0.59034

$a^6 \beta^8$	$a^8 \beta^8$	$a^{10} \beta^8$	$a^{12} \beta^8$	$a^{14} \beta^8$	$a^{16} \beta^8$
+95.97063	+95.58681	+95.26150	+94.97864	+94.72916	+94.50515
—96.00061	—95.64601	—95.34183	—95.07555	—94.83885	—94.62531
+96.68296	+96.34975	+96.06209	+95.80875	+95.58240	+95.37767
+97.49587	+97.17905	+96.90435	+96.66156	+96.44887	+96.24647
+97.93521	+97.63135	+97.36716	+97.13308	+96.92271	+96.73156
+98.23821	+97.94486	+97.68938	+97.46262	+97.25850	+97.07274
+98.46774	+98.18310	+97.93494	+97.71443	+97.51571	+97.33465
+98.65119	+98.37388	+98.13197	+97.91685	+97.72283	+97.54592
+98.80312	+98.58206	+98.29554	+98.08513	+97.89525	+97.72201
+98.93222	+98.66655	+98.43474	+98.22847	+98.04226	+97.87230

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	$a^2\,\beta^{10}$
$a^3\,D_a\,b_{\frac{5}{2}}^{(0)}$		+ 1.39794	+ 2.01336	+ 2.12196	+ 1.73497	+97.43879
$a^2\,D_a\,b_{\frac{5}{2}}^{(1)}$	+ 0.69897	+ 1.78265	+ 2.20645	+ 2.20297	+ 1.73502	—97.30574
$a^1\,D_a\,b_{\frac{5}{2}}^{(2)}$	+ 1.24304	+ 2.05595	+ 2.35932	+ 2.27128	+ 1.73492	+97.84153
$D_a\,b_{\frac{5}{2}}^{(3)}$	+ 1.59522	+ 2.27001	+ 2.48671	+ 2.33039	+ 1.73461	+98.50199
$a^{-1}\,D_a\,b_{\frac{5}{2}}^{(4)}$	+ 1.85846	+ 2.44673	+ 2.59635	+ 2.38244	+ 1.73425	+98.76007
$a^{-2}\,D_a\,b_{\frac{5}{2}}^{(5)}$	+ 2.06932	+ 2.59759	+ 2.69289	+ 2.42888	+ 1.73408	+98.80611
$a^{-3}\,D_a\,b_{\frac{5}{2}}^{(6)}$	+ 2.24541	+ 2.72937	+ 2.77932	+ 2.47071	+ 1.73436	+98.47592
$a^{-4}\,D_a\,b_{\frac{5}{2}}^{(7)}$	+ 2.39667	+ 2.84646	+ 2.85769	+ 2.50866	+ 1.73540	—98.81322
$a^{-5}\,D_a\,b_{\frac{5}{2}}^{(8)}$	+ 2.52930	+ 2.95186	+ 2.92950	+ 2.54330	+ 1.73748	—99.38020
$a^{-6}\,D_a\,b_{\frac{5}{2}}^{(9)}$	+ 2.64740	+ 3.04775	+ 2.99582	+ 2.57506	+ 1.74070	—99.70983
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^4\,D_a^2\,b_{\frac{5}{2}}^{(0)}$		+ 1.39794	+ 2.61212	+ 3.10750	+ 3.15825	+ 2.73499
$a^3\,D_a^2\,b_{\frac{5}{2}}^{(1)}$		+ 2.11810	+ 2.94740	+ 3.28389	+ 3.23331	+ 2.73501
$a^2\,D_a^2\,b_{\frac{5}{2}}^{(2)}$	+ 1.24304	+ 2.57548	+ 3.20375	+ 3.42808	+ 3.29730	+ 2.73498
$a^1\,D_a^2\,b_{\frac{5}{2}}^{(3)}$	+ 1.89625	+ 2.91571	+ 3.41246	+ 3.55048	+ 3.35308	+ 2.73491
$D_a^2\,b_{\frac{5}{2}}^{(4)}$	+ 2.33558	+ 3.18837	+ 3.58909	+ 3.65703	+ 3.40251	+ 2.73485
$a^{-1}\,D_a^2\,b_{\frac{5}{2}}^{(5)}$	+ 2.67138	+ 3.41665	+ 3.74257	+ 3.75150	+ 3.44688	+ 2.73479
$a^{-2}\,D_a^2\,b_{\frac{5}{2}}^{(6)}$	+ 2.94438	+ 3.61337	+ 3.87849	+ 3.83641	+ 3.48714	+ 2.73473
$a^{-3}\,D_a^2\,b_{\frac{5}{2}}^{(7)}$	+ 3.17483	+ 3.78647	+ 4.00064	+ 3.91354	+ 3.52401	+ 2.73457
$a^{-4}\,D_a^2\,b_{\frac{5}{2}}^{(8)}$	+ 3.37440	+ 3.94113	+ 4.11167	+ 3.98421	+ 3.55805	+ 2.73417
$a^{-5}\,D_a^2\,b_{\frac{5}{2}}^{(9)}$	+ 3.55049	+ 4.08099	+ 4.21351	+ 4.04941	+ 3.58970	+ 2.73336
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^5\,D_a^3\,b_{\frac{5}{2}}^{(0)}$			+ 2.96320	+ 3.87965	+ 4.27611	+ 4.27282
$a^4\,D_a^3\,b_{\frac{5}{2}}^{(1)}$		+ 2.11810	+ 3.50281	+ 4.17402	+ 4.43711	+ 4.34245
$a^3\,D_a^3\,b_{\frac{5}{2}}^{(2)}$		+ 2.89625	+ 3.89761	+ 4.40943	+ 4.57172	+ 4.40245
$a^2\,D_a^3\,b_{\frac{5}{2}}^{(3)}$	+ 1.89625	+ 3.41967	+ 4.21004	+ 4.60611	+ 4.68760	+ 4.45517
$a^1\,D_a^3\,b_{\frac{5}{2}}^{(4)}$	+ 2.63661	+ 3.81988	+ 4.46932	+ 4.77534	+ 4.79646	+ 4.50217
$D_a^3\,b_{\frac{5}{2}}^{(5)}$	+ 3.14850	+ 4.14577	+ 4.69140	+ 4.92404	+ 4.88037	+ 4.54458
$a^{-1}\,D_a^3\,b_{\frac{5}{2}}^{(6)}$	+ 3.54644	+ 4.42150	+ 4.88592	+ 5.05679	+ 4.96251	+ 4.58321
$a^{-2}\,D_a^3\,b_{\frac{5}{2}}^{(7)}$	+ 3.87380	+ 4.66090	+ 5.05917	+ 5.17676	+ 5.03744	+ 4.61869
$a^{-3}\,D_a^3\,b_{\frac{5}{2}}^{(8)}$	+ 4.15255	+ 4.87271	+ 5.21550	+ 5.28625	+ 5.10635	+ 4.65148
$a^{-4}\,D_a^3\,b_{\frac{5}{2}}^{(9)}$	+ 4.39559	+ 5.06279	+ 5.35803	+ 5.38697	+ 5.17013	+ 4.68195
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^6\,D_a^4\,b_{\frac{5}{2}}^{(0)}$			+ 2.96320	+ 4.45104	+ 5.19050	+ 5.50521
$a^5\,D_a^4\,b_{\frac{5}{2}}^{(1)}$			+ 3.83826	+ 4.89659	+ 5.45268	+ 5.65283
$a^4\,D_a^4\,b_{\frac{5}{2}}^{(2)}$		+ 2.89625	+ 4.42893	+ 5.24489	+ 5.66882	+ 5.77841
$a^3\,D_a^4\,b_{\frac{5}{2}}^{(3)}$		+ 3.73352	+ 4.87732	+ 5.53092	+ 5.85288	+ 5.88778
$a^2\,D_a^4\,b_{\frac{5}{2}}^{(4)}$	+ 2.63661	+ 4.31559	+ 5.23993	+ 5.77385	+ 6.01332	+ 5.98471
$a^1\,D_a^4\,b_{\frac{5}{2}}^{(5)}$	+ 3.44953	+ 4.76915	+ 5.54502	+ 5.98518	+ 6.15560	+ 6.07178
$D_a^4\,b_{\frac{5}{2}}^{(6)}$	+ 4.02356	+ 5.14303	+ 5.80879	+ 6.17235	+ 6.28348	+ 6.15082
$a^{-1}\,D_a^4\,b_{\frac{5}{2}}^{(7)}$	+ 4.47586	+ 5.46207	+ 6.04139	+ 6.34042	+ 6.39966	+ 6.22321
$a^{-2}\,D_a^4\,b_{\frac{5}{2}}^{(8)}$	+ 4.85152	+ 5.74082	+ 6.24959	+ 6.49302	+ 6.50612	+ 6.28998
$a^{-3}\,D_a^4\,b_{\frac{5}{2}}^{(9)}$	+ 5.17374	+ 5.98864	+ 6.43818	+ 6.63281	+ 6.60439	+ 6.35195

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF

$a^4 \beta^{10}$	$a^6 \beta^{10}$	$a^8 \beta^{10}$	$a^{10} \beta^{10}$	$a^{12} \beta^{10}$	$a^{14} \beta^{10}$		
+96.75755	+96.22243	+95.78068	+95.40415	+95.07555	+94.78462		
—96.69956	—96.21267	—95.80462	—95.45301	—95.14395	—94.86806		
+97.28783	+96.83786	+96.45738	+96.12714	+95.83512	+95.57322		
+97.99168	+97.57876	+97.21797	+96.90735	+96.68130	+96.38265		
+98.29423	+97.90905	+97.57849	+97.28798	+97.02884	+96.79336		
+98.40570	+98.06405	+97.76510	+97.49883	+97.25850	+97.03932		
+98.29813	+98.05277	+97.81058	+97.58276	+98.93068	+97.17329		
—97.65997	+97.60198	+97.62206	+97.50188	+97.35152	+97.19518		
—98.74243	—98.13412	—97.42485	+96.50880	+97.00595	+97.01444		
—99.14403	—98.65201	—98.19812	—97.75350	—97.27707	—96.64185		
$a^2 \beta^{12}$	$a^4 \beta^{12}$	$a^6 \beta^{12}$	$a^8 \beta^{12}$	$a^{10} \beta^{12}$	$a^{12} \beta^{12}$		
+97.95621	+97.20341	+96.60699	+96.11157	+95.68726	+95.31576		
—97.77874	—97.10822	—96.56548	—96.10813	—95.71240	—95.36324		
+98.26195	+98.65380	+97.15570	+96.73202	+96.36260	+96.03467		
+98.86809	+98.31643	+97.86016	+97.46381	+97.12514	+96.81825		
+99.08877	+98.59587	+98.18218	+97.82835	+97.50546	+97.21957		
+99.17969	+98.74741	+98.37540	+98.04765	+97.75411	+97.48793		
+99.27451	+98.87782	+98.58327	+98.22750	+97.95201	+97.70096		
+99.48856	+99.06651	+98.71729	+98.41434	+98.14446	+97.89993		
+99.79933	+99.32506	+98.94755	+98.62986	+98.35280	+98.10537		
+ 0.11886	+99.60850	+99.20350	+98.86650	+98.57643	+98.32049		
β^{14}	$a^2 \beta^{14}$	$a^4 \beta^{14}$	$a^6 \beta^{14}$	$a^8 \beta^{14}$	$a^{10} \beta^{14}$		
+ 3.81418	+98.57113	+97.75312	+97.10021	+96.55493	+96.08597		
+ 3.81418	—98.35578	—97.62658	—97.03246	—96.52939	—96.09237		
+ 3.81417	+98.79993	+98.14260	+97.60065	+97.13734	+96.73170		
+ 3.81416	+99.37479	+98.78558	+98.29412	+97.86987	+97.49542		
+ 3.81414	+99.58613	+99.06474	+98.62214	+98.23517	+98.89029		
+ 3.81413	+99.69597	+99.23419	+98.83381	+98.47901	+98.15973		
+ 3.81411	+99.78246	+99.36162	+98.99276	+98.66316	+98.36459		
+ 3.81410	+99.82891	+99.44622	+99.10635	+98.79985	+98.52025		
+ 3.81411	+99.65091	+99.41282	+99.13745	+98.86982	+98.61736		
+ 3.81421	—99.83129	+98.32193	+98.90782	+98.79337	+98.61251		
β^{14}	β^{16}	$a^2 \beta^{16}$	$a^4 \beta^{16}$	$a^6 \beta^{16}$	$a^8 \beta^{16}$		
+ 5.45267	+ 4.96031	+99.26807	+98.39017	+97.68494	+97.09318		
+ 5.51747	+ 4.96031	—99.01964	—98.23658	—97.59499	—97.04941		
+ 5.57385	+ 4.96031	+99.43359	+98.73153	+98.14940	+97.64956		
+ 5.62374	+ 4.96030	+99.98970	+99.36595	+98.84186	+98.38693		
+ 5.66849	+ 4.96030	+ 0.20076	+99.65102	+99.18024	+98.76607		
+ 5.70905	+ 4.96029	+ 0.32084	+99.83136	+99.40424	+99.02384		
+ 5.74615	+ 4.96029	+ 0.40670	+99.96168	+99.56885	+99.21596		
+ 5.78033	+ 4.96028	+ 0.46095	+ 0.05464	+99.69178	+99.36307		
+ 5.81201	+ 4.96028	+ 0.50446	+ 0.12881	+99.79061	+99.48231		
+ 5.84154	+ 4.96027	+ 0.65613	+ 0.24874	+99.90680	+99.60378		

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^7\ D_a^5\ b_{\frac{5}{2}}^{(0)}$				+ 4.79250	+ 5.92750	+ 6.54044
$a^6\ D_a^5\ b_{\frac{5}{2}}^{(1)}$			+ 3.83826	+ 5.44370	+ 6.31142	+ 6.77693
$a^5\ D_a^5\ b_{\frac{5}{2}}^{(2)}$			+ 4.75471	+ 5.93656	+ 6.62374	+ 6.97624
$a^4\ D_a^5\ b_{\frac{5}{2}}^{(3)}$		+ 3.73352	+ 5.39415	+ 6.33247	+ 6.88678	+ 7.14852
$a^3\ D_a^5\ b_{\frac{5}{2}}^{(4)}$		+ 4.62562	+ 5.89083	+ 6.66342	+ 7.11400	+ 7.30028
$a^2\ D_a^5\ b_{\frac{5}{2}}^{(5)}$	+ 3.44953	+ 5.25993	+ 6.29862	+ 6.94791	+ 7.31406	+ 7.43593
$a^1\ D_a^5\ b_{\frac{5}{2}}^{(6)}$	+ 4.32459	+ 5.76128	+ 6.64535	+ 7.19756	+ 7.49283	+ 7.55860
$D_a^5\ b_{\frac{5}{2}}^{(7)}$	+ 4.95298	+ 6.17861	+ 6.94739	+ 7.42010	+ 7.65445	+ 7.67056
$a^{-1}\ D_a^5\ b_{\frac{5}{2}}^{(8)}$	+ 5.45358	+ 6.53726	+ 7.21525	+ 7.62095	+ 7.80196	+ 7.77355
$a^{-2}\ D_a^5\ b_{\frac{5}{2}}^{(9)}$	+ 5.87271	+ 6.85233	+ 7.45608	+ 7.80403	+ 7.93765	+ 7.86892
	β^2	β^4	$a^2\ \beta^4$	$a^4\ \beta^4$	$a^6\ \beta^4$	$a^8\ \beta^4$
$a^1\ (a\ b_{\frac{3}{2}}^{(0)})$	+ 0.30103	+ 0.39794	+98.49485	+97.89279	+97.48456	+97.17476
$(a\ b_{\frac{3}{2}}^{(1)})$	+ 0.47712	+ 0.41913	—98.67094	—98.16579	—97.80677	—97.52693
$a^{-1}\ (a\ b_{\frac{3}{2}}^{(2)})$	+ 0.57403	+ 0.44909	—99.16579	—98.70986	—98.38080	—98.12116
$a^{-2}\ (a\ b_{\frac{3}{2}}^{(3)})$	+ 0.64098	+ 0.47825	—99.37923	—98.95290	—98.64404	—98.39896
$a^{-3}\ (a\ b_{\frac{3}{2}}^{(4)})$	+ 0.69213	+ 0.50504	—99.50920	—99.10343	—98.80914	—98.57506
$a^{-4}\ (a\ b_{\frac{3}{2}}^{(5)})$	+ 0.73352	+ 0.52940	—99.60076	—99.20955	—98.92625	—98.70077
$a^{-5}\ (a\ b_{\frac{3}{2}}^{(6)})$	+ 0.76829	+ 0.55158	—99.67028	—99.29007	—99.01537	—98.79680
$a^{-6}\ (a\ b_{\frac{3}{2}}^{(7)})$	+ 0.79825	+ 0.57185	—99.72580	—99.35419	—99.08640	—98.87351
$a^{-7}\ (a\ b_{\frac{3}{2}}^{(8)})$	+ 0.82458	+ 0.59049	—99.77173	—99.40703	—99.14491	—98.93677
$a^{-8}\ (a\ b_{\frac{3}{2}}^{(9)})$	+ 0.84806	+ 0.60773	—99.81072	—99.45170	—99.19433	—98.99021
	β^2	β^4	β^6	$a^2\ \beta^6$	$a^4\ \beta^6$	$a^6\ \beta^6$
$a^2\ D_a\ (a\ b_{\frac{3}{2}}^{(0)})$	+ 0.30103	+ 1.06070	+ 1.00673	+98.36991	+97.60512	+97.07562
$a^1\ D_a\ (a\ b_{\frac{3}{2}}^{(1)})$	+ 0.77815	+ 1.21748	+ 1.00940	—98.36991	—97.73983	—97.28389
$D_a\ (a\ b_{\frac{3}{2}}^{(2)})$	+ 1.05115	+ 1.33370	+ 1.00965	—98.34188	—97.90368	—97.55689
$a^{-1}\ D_a\ (a\ b_{\frac{3}{2}}^{(3)})$	+ 1.24304	+ 1.42808	+ 1.00506	+98.77681	+97.98286	+97.21806
$a^{-2}\ D_a\ (a\ b_{\frac{3}{2}}^{(4)})$	+ 1.39110	+ 1.50837	+ 0.99519	+99.34080	+98.70380	+98.20708
$a^{-3}\ D_a\ (a\ b_{\frac{3}{2}}^{(5)})$	+ 1.51167	+ 1.57862	+ 0.97987	+99.65191	+99.05979	+98.60749
$a^{-4}\ D_a\ (a\ b_{\frac{3}{2}}^{(6)})$	+ 1.61338	+ 1.64127	+ 0.95884	+99.86986	+99.30344	+98.87435
$a^{-5}\ D_a\ (a\ b_{\frac{3}{2}}^{(7)})$	+ 1.70134	+ 1.69793	+ 0.93159	+ 0.03755	+99.48889	+99.07541
$a^{-6}\ D_a\ (a\ b_{\frac{3}{2}}^{(8)})$	+ 1.77882	+ 1.74972	+ 0.89730	+ 0.17360	+99.63827	+99.23645
$a^{-7}\ D_a\ (a\ b_{\frac{3}{2}}^{(9)})$	+ 1.84806	+ 1.79745	+ 0.85467	+ 0.28784	+99.76304	+99.37042
	β^2	β^4	β^6	β^8	$a^2\ \beta^8$	$a^4\ \beta^8$
$a^3\ D_a^2\ (a\ b_{\frac{3}{2}}^{(0)})$		+ 1.43136	+ 1.93764	+ 1.78589	+98.50821	+97.58492
$a^2\ D_a^2\ (a\ b_{\frac{3}{2}}^{(1)})$	+ 0.77815	+ 1.78888	+ 2.06853	+ 1.78639	—98.41499	—97.66924
$a^1\ D_a^2\ (a\ b_{\frac{3}{2}}^{(2)})$	+ 1.35218	+ 2.03643	+ 2.16908	+ 1.78655	—98.55827	—98.04981
$D_a^2\ (a\ b_{\frac{3}{2}}^{(3)})$	+ 1.72016	+ 2.22785	+ 2.25044	+ 1.78705	—98.86747	—98.42465
$a^{-1}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(4)})$	+ 1.99316	+ 2.38498	+ 2.31821	+ 1.78909	—99.43137	—98.89109
$a^{-2}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(5)})$	+ 2.21064	+ 2.51885	+ 2.37570	+ 1.79392	—99.87587	—99.29174
$a^{-3}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(6)})$	+ 2.39153	+ 2.63584	+ 2.42501	+ 1.80255	— 0.21241	—99.61370
$a^{-4}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(7)})$	+ 2.54644	+ 2.73995	+ 2.46759	+ 1.81577	— 0.47837	—99.87611
$a^{-5}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(8)})$	+ 2.68191	+ 2.83389	+ 2.50450	+ 1.83407	— 0.69677	— 0.09527
$a^{-6}\ D_a^2\ (a\ b_{\frac{3}{2}}^{(9)})$	+ 2.80230	+ 2.91957	+ 2.53647	+ 1.85757	— 0.88140	— 0.28239

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF							
β^{14}	β^{16}	β^{18}	$a^{2}\beta^{18}$	$a^{4}\beta^{18}$	$a^{6}\beta^{18}$		
+ 6.78598	+ 6.68866	+ 6.16443	+ 0.03556	+99.10233	+98.34845		
+ 6.92211	+ 6.74918	+ 6.16443	—99.75778	—98.92502	—98.23940		
+ 7.03952	+ 6.80229	+ 6.16443	+ 0.14769	+99.40467	+98.78557		
+ 7.14279	+ 6.84961	+ 6.16443	+ 0.69239	+ 0.03658	+99.48204		
+ 7.23498	+ 6.89228	+ 6.16442	+ 0.90629	+ 0.32906	+99.83125		
+ 7.31826	+ 6.93112	+ 6.16442	+ 1.03312	+ 0.51748	+ 0.06503		
+ 7.39421	+ 6.96678	+ 6.16442	+ 1.12087	+ 0.65225	+ 0.23624		
+ 7.46401	+ 6.99972	+ 6.16442	+ 1.18025	+ 0.75134	+ 0.36647		
+ 7.52860	+ 7.03035	+ 6.16442	+ 1.22572	+ 0.82914	+ 0.47041		
+ 7.58870	+ 7.05895	+ 6.16442	+ 1.25841	+ 0.88986	+ 0.55402		
$a^{10}\beta^{4}$	$a^{12}\beta^{4}$	$a^{14}\beta^{4}$	$a^{16}\beta^{4}$	$a^{18}\beta^{4}$	$a^{20}\beta^{4}$	$a^{22}\beta^{4}$	
+96.92485	+96.71542	+96.53505	+96.37676	+96,23553	+96.10823	+95.99211	
—97.29726	—97.10233	—96.93298	—96.78319	—96.64895	—96.52737	—96.41614	
—97.90605	—97.72213	—97.56188	—97.41852	—97.28995	—97.17304	—97.06584	
—98.19484	—98.01953	—97.86568	—97.72851	—97.60468	—97.49178	—97.38805	
—98.37954	—98.21113	—98.06296	—97.93054	—97.81074	—97.70131	—97.60057	
—98.51216	—98.34943	—98.20601	—98.07761	—97.96127	—97.85485	—97.75674	
—98.61387	—98.45589	—98.31649	—98.19155	—98.07822	—97.97444	—97.87865	
—98.69532	—98.54137	—98.40544	—98.28350	—98.17280	—98.07134	—97.97764	
—98.76261	—98.61212	—98.47919	—98.35989	—98.25152	—98.15214	—98.06029	
—98.81952	—98.67203	—98.54173	—98.42476	—98.31847	—98.22094	—98.13076	
$a^{8}\beta^{6}$	$a^{10}\beta^{6}$	$a^{12}\beta^{6}$	$a^{14}\beta^{6}$	$a^{16}\beta^{6}$	$a^{18}\beta^{8}$	$a^{20}\beta^{6}$	
+96.66960	+96.34025	+96.06296	+95.82413	+95.61384	—95.42651	+95.25527	
—96.92485	—96.62829	—96.37530	—96.15473	—95.95952	—95.78390	—95.62428	
—97.26923	—97.02317	—96.80808	—96.61690	—96.44483	—96.28847	—96.14489	
	—96.52582	—96.55218	—96.48544	—96.39270	—96.29226	—96.19089	
+97.78591	+97.40949	+97.05816	+96.71492	+96.35851	+95.94547	+95.29226	
+98.23341	+97.91010	+97.62243	+97.36092	+97.11899	—96.89187	+96.67560	
+98.52210	+98.22008	+97.95383	+97.71443	+97.49596	—97.29422	+97.10612	
+98.73729	+98.44839	+98.19458	+97.96723	+97.76063	—97.57074	+97.39464	
+98.90874	+98.62932	+98.38429	+98.16519	+97.96645	—97.78416	+97.61547	
+99.05091	+98.77890	+98.54065	+98.32785	+98.13501	—97.95832	+97.79497	
$a^{6}\beta^{8}$	$a^{8}\beta^{8}$	$a^{10}\beta^{8}$	$a^{12}\beta^{8}$	$a^{14}\beta^{8}$	$a^{16}\beta^{8}$	$a^{18}\beta^{8}$	
+96.92783	+96.41564	+95.99564	+95.63949	+95.33041	+95.05690	+94.81291	
—97.12117	—96.68565	—96.32387	—96.01410	—95.74273	—95.50243	—95.28556	
—97.64281	—97.31448	—97.00937	—96.75189	—96.52218	—96.31492	—96.12581	
—98.06317	—97.75629	—97.48908	—97.25205	—97.03898	—96.84535	—96.66792	
—98.49338	—98.17224	—97.89998	—97.66223	—97.45043	—97.25904	—97.08422	
—98.86662	—98.52897	—98.24694	—98.00351	—97.78858	—97.59564	—97.42027	
—99.17563	—98.82802	—98.53877	—98.29033	—98.07201	—97.87686	—97.70013	
—99.43289	—99.08021	—98.78666	—98.53479	—98.31387	—98.11681	—97.93872	
—99.65072	—99.29591	—99.00010	—98.74617	—98.52351	—98.32505	—98.14589	
—99.83840	—99.48313	—99.18640	—98.93141	—98.70771	—98.50834	—98.32841	

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	$a^2\,\beta^{10}$
$a^4\, D_a^3\,(a\, b_{\frac{3}{2}}^{(0)})$		+ 1.43136	+ 2.56570	+ 2.91653	+ 2.68918	+98.82499
$a^3\, D_a^3\,(a\, b_{\frac{3}{2}}^{(1)})$		+ 2.13033	+ 2.85393	+ 3.02916	+ 2.68929	—98.66924
$a^2\, D_a^3\,(a\, b_{\frac{3}{2}}^{(2)})$	+ 1.35218	+ 2.56967	+ 3.06929	+ 3.11853	+ 2.68935	—98.94054
$a^1\, D_a^3\,(a\, b_{\frac{3}{2}}^{(3)})$	+ 2.02119	+ 2.89262	+ 3.24154	+ 3.19256	+ 2.68948	—99.23460
$D_a^3\,(a\, b_{\frac{3}{2}}^{(4)})$	+ 2.47028	+ 3.14926	+ 3.38509	+ 3.25581	+ 2.68956	—99.30459
$a^{-1}\, D_a^3\,(a\, b_{\frac{3}{2}}^{(5)})$	+ 2.81270	+ 3.36293	+ 3.50801	+ 3.31118	+ 2.68907	+99.42297
$a^{-2}\, D_a^3\,(a\, b_{\frac{3}{2}}^{(6)})$	+ 3.09050	+ 3.54644	+ 3.61533	+ 3.36071	+ 2.68711	+ 0.29911
$a^{-3}\, D_a^3\,(a\, b_{\frac{3}{2}}^{(7)})$	+ 3.32459	+ 3.70754	+ 3.71035	+ 3.40588	+ 2.68243	+ 0.77981
$a^{-4}\, D_a^3\,(a\, b_{\frac{3}{2}}^{(8)})$	+ 3.52701	+ 3.85132	+ 3.79542	+ 3.44781	+ 2.67333	+ 1.13523
$a^{-5}\, D_a^3\,(a\, b_{\frac{3}{2}}^{(9)})$	+ 3.70539	+ 3.98128	+ 3.87221	+ 3.48744	+ 2.65757	+ 1.42151

	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^5\, D_a^4\,(a\, b_{\frac{3}{2}}^{(0)})$			+ 2.92621	+ 3.74098	+ 3.97929	+ 3.68922
$a^4\, D_a^4\,(a\, b_{\frac{3}{2}}^{(1)})$		+ 2.13033	+ 3.42864	+ 3.98378	+ 4.07840	+ 3.68925
$a^3\, D_a^4\,(a\, b_{\frac{3}{2}}^{(2)})$		+ 2.89625	+ 3.79077	+ 4.17379	+ 4.15905	+ 3.68928
$a^2\, D_a^4\,(a\, b_{\frac{3}{2}}^{(3)})$	+ 2.02119	+ 3.40702	+ 4.07349	+ 4.32980	+ 4.22703	+ 3.68931
$a^1\, D_a^4\,(a\, b_{\frac{3}{2}}^{(4)})$	+ 2.77131	+ 3.79456	+ 4.30542	+ 4.46210	+ 4.28579	+ 3.68934
$D_a^4\,(a\, b_{\frac{3}{2}}^{(5)})$	+ 3.28983	+ 4.10827	+ 4.50207	+ 4.57695	+ 4.33754	+ 3.68937
$a^{-1}\, D_a^4\,(a\, b_{\frac{3}{2}}^{(6)})$	+ 3.69256	+ 4.37251	+ 4.67274	+ 4.67843	+ 4.38373	+ 3.68960
$a^{-2}\, D_a^4\,(a\, b_{\frac{3}{2}}^{(7)})$	+ 4.02356	+ 4.60119	+ 4.82343	+ 4.76941	+ 4.42530	+ 3.69051
$a^{-3}\, D_a^4\,(a\, b_{\frac{3}{2}}^{(8)})$	+ 4.30516	+ 4.80303	+ 4.95826	+ 4.85194	+ 4.46289	+ 3.69300
$a^{-4}\, D_a^4\,(a\, b_{\frac{3}{2}}^{(9)})$	+ 4.55049	+ 4.98386	+ 5.08017	+ 4.92759	+ 4.49686	+ 3.69846

	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^6\, D_a^5\,(a\, b_{\frac{3}{2}}^{(0)})$			+ 2.92621	+ 4.33417	+ 4.96253	+ 5.11249
$a^5\, D_a^5\,(a\, b_{\frac{3}{2}}^{(1)})$			+ 3.77131	+ 4.73745	+ 5.17301	+ 5.20112
$a^4\, D_a^5\,(a\, b_{\frac{3}{2}}^{(2)})$		+ 2.89625	+ 4.33608	+ 5.04792	+ 5.34306	+ 5.27470
$a^3\, D_a^5\,(a\, b_{\frac{3}{2}}^{(3)})$		+ 3.72555	+ 4.76032	+ 5.29946	+ 5.48557	+ 5.33759
$a^2\, D_a^5\,(a\, b_{\frac{3}{2}}^{(4)})$	+ 2.77131	+ 4.29830	+ 5.10016	+ 5.51065	+ 5.60814	+ 5.39252
$a^1\, D_a^5\,(a\, b_{\frac{3}{2}}^{(5)})$	+ 3.59085	+ 4.74212	+ 5.38376	+ 5.69255	+ 5.71564	+ 5.44127
$D_a^5\,(a\, b_{\frac{3}{2}}^{(6)})$	+ 4.16969	+ 5.10634	+ 5.62716	+ 5.85225	+ 5.81135	+ 5.48510
$a^{-1}\, D_a^5\,(a\, b_{\frac{3}{2}}^{(7)})$	+ 4.62562	+ 5.41603	+ 5.84038	+ 5.99458	+ 5.89759	+ 5.52493
$a^{-2}\, D_a^5\,(a\, b_{\frac{3}{2}}^{(8)})$	+ 5.00413	+ 5.68587	+ 6.03007	+ 6.12295	+ 5.97604	+ 5.56147
$a^{-3}\, D_a^5\,(a\, b_{\frac{3}{2}}^{(9)})$	+ 5.32864	+ 5.92524	+ 6.20089	+ 6.23989	+ 6.04793	+ 5.59534

	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^7\, D_a^6\,(a\, b_{\frac{3}{2}}^{(0)})$				+ 4.68336	+ 5.73209	+ 6.22910
$a^6\, D_a^6\,(a\, b_{\frac{3}{2}}^{(1)})$			+ 3.77131	+ 5.29959	+ 6.07253	+ 6.41526
$a^5\, D_a^6\,(a\, b_{\frac{3}{2}}^{(2)})$			+ 4.66756	+ 5.76098	+ 6.34543	+ 6.56927
$a^4\, D_a^6\,(a\, b_{\frac{3}{2}}^{(3)})$		+ 3.72555	+ 5.28785	+ 6.12773	+ 6.57235	+ 6.70044
$a^3\, D_a^6\,(a\, b_{\frac{3}{2}}^{(4)})$		+ 4.61205	+ 5.76586	+ 6.43138	+ 6.76624	+ 6.81460
$a^2\, D_a^6\,(a\, b_{\frac{3}{2}}^{(5)})$	+ 3.59085	+ 5.23922	+ 6.15556	+ 6.69024	+ 6.93538	+ 6.91562
$a^1\, D_a^6\,(a\, b_{\frac{3}{2}}^{(6)})$	+ 4.47072	+ 5.73283	+ 6.48484	+ 6.91571	+ 7.08528	+ 7.00619
$D_a^6\,(a\, b_{\frac{3}{2}}^{(7)})$	+ 5.10274	+ 6.14228	+ 6.77008	+ 7.11538	+ 7.21985	+ 7.08825
$a^{-1}\, D_a^6\,(a\, b_{\frac{3}{2}}^{(8)})$	+ 5.60618	+ 6.49315	+ 7.02177	+ 7.29453	+ 7.34191	+ 7.16327
$a^{-2}\, D_a^6\,(a\, b_{\frac{3}{2}}^{(9)})$	+ 6.02761	+ 6.80067	+ 7.24701	+ 7.45697	+ 7.45356	+ 7.23234

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF

$a^4 \beta^{10}$	$a^6 \beta^{10}$	$a^8 \beta^{10}$	$a^{10} \beta^{10}$	$a^{12} \beta^{10}$	$a^{14} \beta^{10}$	$a^{16} \beta^{10}$
+97.73801	+96.92634	+96.26198	+95.68664	+95.16435	+95.66276	+94.14618
—97.81445	—97.17667	—96.66521	—96.23780	—95.87040	—95.54777	—95.26007
—98.37050	—97.90994	—97.52201	—97.18631	—96.89009	—96.62480	—96.38453
—98.74488	—98.34029	—97.99382	—97.69008	—97.41931	—97.17484	—96.95187
—98.89248	—98.54078	—98.23321	—97.95950	—97.71272	—97.48789	—97.28133
—97.36197	—98.30166	—98.17928	—97.99522	—97.80367	—97.61719	—97.43925
+99.51687	+98.84432	+98.15238	+96.83283	—97.37796	—97.42856	—97.36046
+ 0.05594	+99.48256	+98.98815	+98.53622	+98.09915	+97.64229	+97.07940
+ 0.43242	+99.88697	+99.42974	+99.02871	+98.66547	+98.32764	+98.00550
+ 0.73030	+ 0.19850	+99.75745	+99.37570	+99.03568	+98.72631	+98.44001

$a^2 \beta^{12}$	$a^4 \beta^{12}$	$a^6 \beta^{12}$	$a^8 \beta^{12}$	$a^{10} \beta^{12}$	$a^{12} \beta^{12}$	$a^{14} \beta^{12}$
+99.27501	+98.00552	+96.94037	+95.66087	—95.46240	—95.38202	—95.17319
—99.07352	—98.11405	—97.38634	—96.79623	—96.29885	—95.86806	—95.48996
—99.44968	—98.82504	—98.31641	—97.88547	—97.51073	—97.17378	—96.88053
—99.74103	—99.20859	—98.76444	—98.38139	—98.04376	—97.74145	—97.46752
—99.83864	—99.38650	—98.99798	—98.65636	—98.35102	—98.07471	—97.82220
—99.91356	—99.51717	—99.16701	—98.85556	—98.57466	—98.31858	—98.08318
— 0.43210	—99.85418	—99.43922	—99.10401	—98.81604	—98.56017	—98.32819
— 1.03252	— 0.34052	—99.83921	—99.44685	—99.12297	—98.84503	—98.59971
— 1.52115	— 0.79486	— 0.25303	—99.82210	—99.46567	—99.16204	—98.89721
— 1.91726	— 1.18178	— 0.62492	— 0.17579	—99.80047	—99.47902	—99.19838

β^{14}	$a^2 \beta^{14}$	$a^4 \beta^{14}$	$a^6 \beta^{14}$	$a^8 \beta^{14}$	$a^{10} \beta^{14}$	$a^{12} \beta^{14}$
+ 4.76842	+99.83028	+98.33164	—96.26576	—96.79982	—96.49582	—96.15625
+ 4.76843	—99.59432	—98.53247	—97.71095	—97.03330	—96.45301	—95.94349
+ 4.76843	— 0.06091	—99.38735	—98.83525	—98.36506	—97.95447	—97.58949
+ 4.76845	— 0.35472	—99.78308	—99.30241	—98.88542	—98.51618	—98.18433
+ 4.76846	— 0.47171	—99.98299	—99.56055	—99.18737	—98.85255	—98.54858
+ 4.76847	— 0.55699	— 0.12326	—99.74255	—99.40233	—99.09430	—98.81259
+ 4.76848	— 0.60612	— 0.21742	—99.87142	—99.55901	—99.27388	—99.01142
+ 4.76841	+ 0.56622	—99.82552	—99.80005	—99.58830	—99.35589	—99.12745
+ 4.76802	+ 1.67698	+ 0.78123	+99.92787	—97.29144	—99.08847	—99.04318
+ 4.76673	+ 2.28325	+ 1.45979	+ 0.79150	+ 0.19445	—99.60859	—98.92481

β^{14}	β^{16}	$a^2 \beta^{16}$	$a^4 \beta^{16}$	$a^6 \beta^{16}$	$a^8 \beta^{16}$	$a^{10} \beta^{16}$
+ 6.30624	+ 5.91455	+ 0.47182	+98.60573	—98.00392	—97.64103	—97.20761
+ 6.38647	+ 5.91455	— 0.21000	—99.04600	—98.12105	—97.33298	—96.62757
+ 6.45416	+ 5.91455	— 0.75715	— 0.03937	—99.44766	—98.94146	—98.49777
+ 6.51271	+ 5.91456	— 1.05560	— 0.44777	—99.93323	—99.48463	—99.08580
+ 6.56430	+ 5.91456	— 1.18711	— 0.66469	— 0.21080	—99.80818	—99.44573
+ 6.61040	+ 5.91457	— 1.27815	— 0.81413	— 0.40474	— 0.03742	—99.70377
+ 6.65208	+ 5.91457	— 1.33486	— 0.91781	— 0.54496	— 0.20712	—99.89788
+ 6.69010	+ 5.91457	— 1.37591	— 0.99590	— 0.65282	— 0.33955	— 0.05100
+ 6.72506	+ 5.91460	— 1.84056	— 1.24606	— 0.83396	— 0.50077	— 0.20994
+ 6.75788	+ 5.91478	— 2.54965	— 1.77434	— 1.21924	— 0.79580	— 0.45880

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	$a^2\,\beta^8$	$a^4\,\beta^8$
$(a^2\,b_{\frac{5}{2}}^{(0)})$	+ 0.30103	+ 1.02119	+ 1.18416	+ 0.83182	+97.04085	+96.43880
$a^{-1}\,(a^2\,b_{\frac{5}{2}}^{(1)})$	+ 0.69897	+ 1.22724	+ 1.27119	+ 0.83200	—96.96167	—96.42656
$a^{-2}\,(a^2\,b_{\frac{5}{2}}^{(2)})$	+ 0.94201	+ 1.39204	+ 1.34400	+ 0.83153	+97.57269	+97.07977
$a^{-3}\,(a^2\,b_{\frac{5}{2}}^{(3)})$	+ 1.11810	+ 1.50504	+ 1.40709	+ 0.82961	+98.33504	+97.87129
$a^{-4}\,(a^2\,b_{\frac{5}{2}}^{(4)})$	+ 1.25640	+ 1.60858	+ 1.46306	+ 0.82589	+98.73659	+98.29423
$a^{-5}\,(a^2\,b_{\frac{5}{2}}^{(5)})$	+ 1.37035	+ 1.69770	+ 1.51356	+ 0.82019	+99.01023	+98.58426
$a^{-6}\,(a^2\,b_{\frac{5}{2}}^{(6)})$	+ 1.46726	+ 1.77597	+ 1.55968	+ 0.81243	+99.21629	+98.80328
$a^{-7}\,(a^2\,b_{\frac{5}{2}}^{(7)})$	+ 1.55158	+ 1.84577	+ 1.60223	+ 0.80254	+99.38052	+98.97803
$a^{-8}\,(a^2\,b_{\frac{5}{2}}^{(8)})$	+ 1.62621	+ 1.90876	+ 1.64176	+ 0.79042	+99.51642	+99.12264
$a^{-9}\,(a^2\,b_{\frac{5}{2}}^{(9)})$	+ 1.69316	+ 1.96616	+ 1.67873	+ 0.77596	+99.63194	+99.24548
	β^2	β^4	β^6	β^8	β^{10}	$a^2\,\beta^{10}$
$a^1\,D_a\,(a^2\,b_{\frac{5}{2}}^{(0)})$	+ 0.60206	+ 1.66276	+ 2.12609	+ 2.16435	+ 1.73499	+97.04085
$D_a\,(a^2\,b_{\frac{5}{2}}^{(1)})$	+ 1.17609	+ 1.97486	+ 2.29711	+ 2.23845	+ 1.73501	—96.86021
$a^{-1}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(2)})$	+ 1.54407	+ 2.20918	+ 2.43599	+ 2.30174	+ 1.73498	+97.27166
$a^{-2}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(3)})$	+ 1.81707	+ 2.39828	+ 2.55359	+ 2.35697	+ 1.73495	+97.52886
$a^{-3}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(4)})$	+ 2.03455	+ 2.55743	+ 2.65597	+ 2.40591	+ 1.73512	—98.08337
$a^{-4}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(5)})$	+ 2.21544	+ 2.69514	+ 2.74687	+ 2.44976	+ 1.73571	—98.80611
$a^{-5}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(6)})$	+ 2.37035	+ 2.81667	+ 2.82877	+ 2.48938	+ 1.73700	—99.23559
$a^{-6}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(7)})$	+ 2.50582	+ 2.92552	+ 2.90343	+ 2.52542	+ 1.73922	—99.55054
$a^{-7}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(8)})$	+ 2.62621	+ 3.02415	+ 2.97211	+ 2.55838	+ 1.74262	—99.80042
$a^{-8}\,D_a\,(a^2\,b_{\frac{5}{2}}^{(9)})$	+ 2.73455	+ 3.11435	+ 3.03578	+ 2.58864	+ 1.74741	— 0.00761
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^2\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(0)})$	+ 0.60206	+ 2.16435	+ 2.93066	+ 3.26105	+ 3.21930	+ 2.73500
$a^1\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(1)})$	+ 1.47712	+ 2.61013	+ 3.19499	+ 3.41069	+ 3.28523	+ 2.73500
$D_a^2\,(a^2\,b_{\frac{5}{2}}^{(2)})$	+ 2.02119	+ 2.94417	+ 3.40786	+ 3.53659	+ 3.34245	+ 2.73500
$a^{-1}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(3)})$	+ 2.41913	+ 3.21283	+ 3.58691	+ 3.64557	+ 3.39301	+ 2.73499
$a^{-2}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(4)})$	+ 2.73352	+ 3.43825	+ 3.74190	+ 3.74179	+ 3.43830	+ 2.73497
$a^{-3}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(5)})$	+ 2.99359	+ 3.63280	+ 3.87883	+ 3.82801	+ 3.47932	+ 2.73490
$a^{-4}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(6)})$	+ 3.21544	+ 3.80414	+ 4.00167	+ 3.90616	+ 3.51684	+ 2.73466
$a^{-5}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(7)})$	+ 3.40891	+ 3.95737	+ 4.11318	+ 3.97762	+ 3.55145	+ 2.73413
$a^{-6}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(8)})$	+ 3.58045	+ 4.09603	+ 4.21538	+ 4.04347	+ 3.58361	+ 2.73309
$a^{-7}\,D_a^2\,(a^2\,b_{\frac{5}{2}}^{(9)})$	+ 3.73455	+ 4.22271	+ 4.30978	+ 4.10450	+ 3.61372	+ 2.73130
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^3\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(0)})$		+ 2.47712	+ 3.60138	+ 4.20573	+ 4.44480	+ 4.34245
$a^2\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(1)})$	+ 1.47712	+ 3.10806	+ 3.97606	+ 4.43810	+ 4.57924	+ 4.40245
$a^1\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(2)})$	+ 2.32222	+ 3.57142	+ 4.27563	+ 4.63214	+ 4.69481	+ 4.45516
$D_a^3\,(a^2\,b_{\frac{5}{2}}^{(3)})$	+ 2.89625	+ 3.93888	+ 4.52595	+ 4.79914	+ 4.79631	+ 4.50216
$a^{-1}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(4)})$	+ 3.33558	+ 4.24407	+ 4.74138	+ 4.94595	+ 4.88687	+ 4.54456
$a^{-2}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(5)})$	+ 3.69256	+ 4.50548	+ 4.93076	+ 5.07708	+ 4.96866	+ 4.58319
$a^{-3}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(6)})$	+ 3.99359	+ 4.73436	+ 5.09991	+ 5.19565	+ 5.04327	+ 4.61866
$a^{-4}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(7)})$	+ 4.25401	+ 4.93809	+ 5.25288	+ 5.30392	+ 5.11188	+ 4.65144
$a^{-5}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(8)})$	+ 4.48354	+ 5.12175	+ 5.39259	+ 5.40357	+ 5.17540	+ 4.68189
$a^{-6}\,D_a^3\,(a^2\,b_{\frac{5}{2}}^{(9)})$	+ 4.68879	+ 5.28904	+ 5.52126	+ 5.49589	+ 5.23455	+ 4.71031

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF							
$a^{6}\,\beta^{8}$	$a^{8}\,\beta^{8}$	$a^{10}\,\beta^{8}$	$a^{12}\,\beta^{8}$	$a^{14}\,\beta^{8}$	$a^{16}\,\beta^{8}$		
+95.97068	+95.58681	+95.26150	+94.97864	+94.72916	+94.50515		
—96.00061	—95.64601	—95.34188	—95.07555	—94.83885	—94.62531		
+96.68296	+96.34974	+96.06209	+95.80875	+95.58240	+95.37767		
+97.49587	+97.17905	+96.90435	+96.66156	+96.44387	+96.24647		
+97.93521	+97.63185	+97.36716	+97.13308	+96.92271	+96.73156		
+98.23821	+97.94486	+97.68938	+97.46262	+97.25850	+97.07274		
+98.46774	+98.18310	+97.93494	+97.71443	+97.51571	+97.33465		
+98.65119	+98.37388	+98.13197	+97.91685	+97.72283	+97.54592		
+98.80312	+98.53206	+98.29554	+98.08513	+97.89525	+97.72201		
+98.93222	+98.66655	+98.43474	+98.22847	+98.04226	+97.87230		
$a^{4}\,\beta^{10}$	$a^{6}\,\beta^{10}$	$a^{8}\,\beta^{10}$	$a^{10}\,\beta^{10}$	$a^{12}\,\beta^{10}$	$a^{14}\,\beta^{10}$		
+96.32183	+95.75755	+95.29248	+94.89708	+94.55267	+94.24797		
—96.22243	—95.71105	—95.28353	—94.91593	—94.59329	—94.30535		
+96.69956	+96.23581	+95.84460	+95.50583	+95.20656	+94.93902		
+97.08090	+96.70192	+96.37288	+96.08178	+95.82060	+95.58365		
—97.39114	—96.74768	—96.04700		+95.38489	+95.40415		
—98.22336	—97.73305	—97.30349	—96.91637	—96.55954	—96.22384		
—98.68631	—98.22886	—97.83285	—97.48130	—97.16353	—96.87226		
—99.02170	—98.58295	—98.20452	—97.86986	—97.56865	—97.29393		
—99.28649	—98.86112	—98.49489	—98.17155	—97.88101	—97.61650		
—99.50542	—99.09050	—98.73372	—98.41904	—98.13653	—97.87953		
$a^{2}\,\beta^{12}$	$a^{4}\,\beta^{12}$	$a^{6}\,\beta^{12}$	$a^{8}\,\beta^{12}$	$a^{10}\,\beta^{12}$	$a^{12}\,\beta^{12}$		
+97.21189	+96.35961	+95.67514	+95.09968	+94.60097	+94.16137		
—96.94788	—96.19025	—95.57171	—95.04689	—94.58995	—94.18469		
+97.27934	+96.62578	+96.09237	+95.64048	+95.24797	+94.90091		
+97.76026	+97.26315	+96.84023	+96.47138	+96.14392	+95.84924		
+98.27283	+97.81957	+97.43041	+97.08837	+96.78283	+96.50636		
+98.91853	+98.40879	+97.99265	+97.63752	+97.32591	+97.04722		
+99.44942	+98.91051	+98.47411	+98.10532	+97.78465	+97.50008		
+99.86897	+99.32036	+98.87498	+98.49871	+98.17216	+97.88314		
+ 0.21014	+99.66001	+99.21186	+98.83251	+98.50305	+98.21150		
+ 0.49586	+99.94761	+99.49977	+99.11989	+98.78949	+98.49687		
β^{14}	$a^{2}\,\beta^{14}$	$a^{4}\,\beta^{14}$	$a^{6}\,\beta^{14}$	$a^{8}\,\beta^{14}$	$a^{10}\,\beta^{14}$		
+ 3.81418	+97.50574	+96.47641	+95.57008	+94.64048	+93.11394		
+ 3.81418	—97.15766	—96.22882	—95.40106	—94.57171	—93.27875		
+ 3.81418	+97.47041	+96.72986	+96.11982	+95.59945	+95.14551		
+ 3.81418	+98.14260	+97.60065	+97.13734	+96.73170	+96.37044		
+ 3.81418	+98.64183	+98.15470	+97.73355	+97.36141	+97.02745		
+ 3.81417	+98.86054	+98.43215	+98.05455	+97.71682	+97.40964		
+ 3.81418	—98.78680	+97.64440	+97.89980	+97.73394	+97.51762		
+ 3.81425	—99.89580	—99.19661	—98.56365	—97.93066	—97.14356		
+ 3.81444	— 0.46576	—99.82080	—99.27069	—98.78048	—98.32860		
+ 3.81488	— 0.89234	— 0.26679	—99.74072	—99.28067	—98.86748		

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^4\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(0)})$		+ 2.47712	+ 4.11996	+ 5.01812	+ 5.50976	+ 5.67806
$a^3\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(1)})$		+ 3.41913	+ 4.63331	+ 5.34501	+ 5.71850	+ 5.80081
$a^2\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(2)})$	+ 2.32222	+ 4.06455	+ 5.03834	+ 5.61623	+ 5.89689	+ 5.90793
$a^1\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(3)})$	+ 3.19728	+ 4.56019	+ 5.37322	+ 5.84830	+ 6.05284	+ 6.00302
$D_a^4\, (a^2\, b_{\frac{5}{2}}^{(4)})$	+ 3.81270	+ 4.96397	+ 5.65903	+ 6.05133	+ 6.19148	+ 6.08855
$a^{-1}\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(5)})$	+ 4.29462	+ 5.30535	+ 5.90859	+ 6.23193	+ 6.31635	+ 6.16630
$a^{-2}\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(6)})$	+ 4.69256	+ 5.60143	+ 6.13026	+ 6.39466	+ 6.42999	+ 6.23758
$a^{-3}\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(7)})$	+ 5.03216	+ 5.86309	+ 6.32979	+ 6.54284	+ 6.53429	+ 6.30339
$a^{-4}\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(8)})$	+ 5.32864	+ 6.09765	+ 6.51132	+ 6.67888	+ 6.63068	+ 6.36452
$a^{-5}\, D_a^4\, (a^2\, b_{\frac{5}{2}}^{(9)})$	+ 5.59188	+ 6.31031	+ 6.67791	+ 6.80469	+ 6.72031	+ 6.42159
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^5\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(0)})$			+ 4.44032	+ 5.69559	+ 6.44319	+ 6.84795
$a^4\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(1)})$		+ 3.41913	+ 5.14443	+ 6.13496	+ 6.73492	+ 7.03819
$a^3\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(2)})$		+ 4.37337	+ 5.68424	+ 6.49623	+ 6.98297	+ 7.20348
$a^2\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(3)})$	+ 3.19728	+ 5.04968	+ 6.12258	+ 6.80300	+ 7.19882	+ 7.34967
$a^1\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(4)})$	+ 4.11373	+ 5.58110	+ 6.49200	+ 7.06967	+ 7.38996	+ 7.48080
$D_a^5\, (a^2\, b_{\frac{5}{2}}^{(5)})$	+ 4.77175	+ 6.02094	+ 6.81153	+ 7.30564	+ 7.56154	+ 7.59970
$a^{-1}\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(6)})$	+ 5.29462	+ 6.39708	+ 7.09328	+ 7.51734	+ 7.71723	+ 7.70850
$a^{-2}\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(7)})$	+ 5.73113	+ 6.72612	+ 7.34539	+ 7.70938	+ 7.85978	+ 7.80878
$a^{-3}\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(8)})$	+ 6.10679	+ 7.01884	+ 7.57364	+ 7.88515	+ 7.99126	+ 7.90180
$a^{-4}\, D_a^5\, (a^2\, b_{\frac{5}{2}}^{(9)})$	+ 6.43698	+ 7.28263	+ 7.78225	+ 8.04725	+ 8.11328	+ 7.98854
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^{-1}\, (a^3\, b_{\frac{7}{2}}^{(0)})$	+ 0.30103	+ 1.35218	+ 1.88667	+ 2.06554	+ 1.91109	+ 1.33706
$a^{-2}\, (a^3\, b_{\frac{7}{2}}^{(1)})$	+ 0.84510	+ 1.68237	+ 2.09391	+ 2.18650	+ 1.96545	+ 1.33706
$a^{-3}\, (a^3\, b_{\frac{7}{2}}^{(2)})$	+ 1.19728	+ 1.93101	+ 2.26277	+ 2.29017	+ 2.01375	+ 1.33706
$a^{-4}\, (a^3\, b_{\frac{7}{2}}^{(3)})$	+ 1.46052	+ 2.13146	+ 2.40601	+ 2.38122	+ 2.05721	+ 1.33707
$a^{-5}\, (a^3\, b_{\frac{7}{2}}^{(4)})$	+ 1.67138	+ 2.29976	+ 2.53078	+ 2.46262	+ 2.09670	+ 1.33716
$a^{-6}\, (a^3\, b_{\frac{7}{2}}^{(5)})$	+ 1.84747	+ 2.44498	+ 2.64153	+ 2.53635	+ 2.13284	+ 1.33742
$a^{-7}\, (a^3\, b_{\frac{7}{2}}^{(6)})$	+ 1.99873	+ 2.57277	+ 2.74125	+ 2.60386	+ 2.16612	+ 1.33794
$a^{-8}\, (a^3\, b_{\frac{7}{2}}^{(7)})$	+ 2.13136	+ 2.68691	+ 2.83202	+ 2.66618	+ 2.19694	+ 1.33884
$a^{-9}\, (a^3\, b_{\frac{7}{2}}^{(8)})$	+ 2.24946	+ 2.79007	+ 2.91539	+ 2.72412	+ 2.22558	+ 1.34022
$a^{-10}\, (a^3\, b_{\frac{7}{2}}^{(9)})$	+ 2.35591	+ 2.88419	+ 2.99250	+ 2.77831	+ 2.25229	+ 1.34220
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$D_a\, (a^3\, b_{\frac{7}{2}}^{(0)})$	+ 0.77815	+ 2.06633	+ 2.79880	+ 3.17863	+ 3.26166	+ 3.04035
$a^{-1}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(1)})$	+ 1.44716	+ 2.48108	+ 3.07395	+ 3.35817	+ 3.36872	+ 3.08911
$a^{-2}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(2)})$	+ 1.89625	+ 2.79843	+ 3.29874	+ 3.51114	+ 3.46274	+ 3.13294
$a^{-3}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(3)})$	+ 2.23867	+ 3.05712	+ 3.48972	+ 3.64491	+ 3.54674	+ 3.17275
$a^{-4}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(4)})$	+ 2.51646	+ 3.27614	+ 3.65625	+ 3.74885	+ 3.62276	+ 3.20921
$a^{-5}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(5)})$	+ 2.75055	+ 3.46639	+ 3.80422	+ 3.87169	+ 3.69225	+ 3.24286
$a^{-6}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(6)})$	+ 2.95298	+ 3.63472	+ 3.93753	+ 3.96996	+ 3.75629	+ 3.27408
$a^{-7}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(7)})$	+ 3.13136	+ 3.78578	+ 4.05898	+ 4.06046	+ 3.81570	+ 3.30323
$a^{-8}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(8)})$	+ 3.29085	+ 3.92284	+ 4.17059	+ 4.14441	+ 3.87113	+ 3.33056
$a^{-9}\, D_a\, (a^3\, b_{\frac{7}{2}}^{(9)})$	+ 3.43510	+ 4.04832	+ 4.27392	+ 4.22275	+ 3.92310	+ 3.35630

PERTURBATIVE FUNCTION.

LOGARITHM OF THE COEFFICIENT OF							
β^{14}	β^{16}	$a^{2}\beta^{16}$	$a^{4}\beta^{16}$	$a^{6}\beta^{16}$	$a^{8}\beta^{16}$		
+ 5.52599	+ 4.96081	+97.88632	+96.52141	—95.45255	—95.39235		
+ 5.58184	+ 4.96081	—97.43245	—96.06036	+95.41664	+95.26031		
+ 5.63042	+ 4.96031	+97.79047	+96.95069	+96.24596	+95.63488		
+ 5.67452	+ 4.96031	+98.64338	+98.06035	+97.55984	+97.12016		
+ 5.71455	+ 4.96081	+99.14550	+98.62640	+98.17495	+97.77425		
+ 5.75120	+ 4.96081	+99.39940	+98.94027	+98.58382	+98.16844		
+ 5.78499	+ 4.96030	+99.60058	+99.18111	+98.80634	+98.46694		
+ 5.81635	+ 4.96030	+ 0.09868	+99.57899	+99.15990	+98.80156		
+ 5.84560	+ 4.96027	+ 0.71888	+ 0.11215	+99.62617	+99.22058		
+ 5.87301	+ 4.96019	+ 1.25707	+ 0.62033	+ 0.10103	+99.66348		
β^{14}	β^{16}	β^{18}	$a^{2}\beta^{18}$	$a^{4}\beta^{18}$	$a^{6}\beta^{18}$		
+ 6.95786	+ 6.76308	+ 6.16443	+98.81617	—96.70791	—96.64038		
+ 7.07117	+ 6.81461	+ 6.16443	—97.66842	+96.78611	+96.48260		
+ 7.17119	+ 6.86068	+ 6.16443	+98.20616	+97.28991	+96.38780		
+ 7.26074	+ 6.90232	+ 6.16443	+99.24138	+98.62059	+98.08590		
+ 7.34188	+ 6.94081	+ 6.16443	+99.75321	+99.20388	+98.72385		
+ 7.41593	+ 6.97525	+ 6.16443	+ 0.03248	+99.54465	+99.11114		
+ 7.48417	+ 7.00758	+ 6.16443	+ 0.24150	+99.79664	+99.39749		
+ 7.54739	+ 7.03768	+ 6.16443	+ 0.38891	+99.80389	+99.61186		
+ 7.60680	+ 7.06582	+ 6.16443	—99.52165	+99.98118	+99.62800		
+ 7.66145	+ 7.09225	+ 6.16444	— 1.34684	— 0.54097	—99.71624		
$a^{2}\beta^{12}$	$a^{4}\beta^{12}$	$a^{6}\beta^{12}$	$a^{8}\beta^{12}$	$a^{10}\beta^{12}$	$a^{12}\beta^{12}$		
+95.67836	+95.07631	+94.57655	+94.14879	+93.77452	+93.44248		
—95.52347	—94.97256	—94.50880	—94.10721	—93.75435	—93.43775		
+95.75071	+95.23580	+94.79884	+94.41830	+94.08279	+93.77815		
—96.57822	—96.09010	—95.67390	—95.31026	—94.98677	—94.69548		
—97.50508	—97.08772	—96.63808	—96.28798	—95.97594	—95.69425		
—98.03772	—97.58693	—97.20083	—96.86201	—96.55958	—96.28601		
—98.41944	—97.98219	—97.60737	—97.27810	—96.98380	—96.71736		
—98.71687	—98.29090	—97.92563	—97.60454	—97.31734	—97.05711		
—98.95991	—98.54361	—98.18612	—97.87240	—97.59141	—97.33666		
—99.16781	—98.75279	—98.40832	—98.09887	—97.82320	—97.57357		
β^{14}	$a^{2}\beta^{14}$	$a^{4}\beta^{14}$	$a^{6}\beta^{14}$	$a^{8}\beta^{14}$	$a^{10}\beta^{14}$		
+ 2.41624	+95.77525	+95.08185	+94.50243	+94.00432	+93.56820		
+ 2.41624	—95.54974	—94.91434	—94.37731	—93.91116	—93.50106		
+ 2.41624	+95.65677	+95.06707	+94.56467	+94.12710	+93.73799		
+ 2.41624	—96.27717	—95.78111	—95.26371	—94.85431	—94.48996		
+ 2.41624	—96.70673	—96.25271	—95.85432	—95.49886	—95.17754		
+ 2.41624	+97.35648	+96.71602	+96.12165	+95.53122	+94.84942		
+ 2.41620	+98.19479	+97.63840	+97.15144	+96.71497	+96.31635		
+ 2.41611	+98.71687	+98.18715	+97.72631	+97.31610	+96.94496		
+ 2.41592	+99.11118	+98.59839	+98.15328	+97.75780	+97.40080		
+ 2.41556	+99.48055	+98.93057	+98.49705	+98.11234	+97.76538		

COEFFICIENTS OF THE

FUNCTION.	LOGARITHM OF THE COEFFICIENT OF					
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^{1} D_a^2 (a^3 b_{\frac{7}{2}}^{(0)})$	+ 1.07918	+ 2.67943	+ 3.62750	+ 4.19991	+ 4.48197	+ 4.49741
$D_a^2 (a^3 b_{\frac{7}{2}}^{(1)})$	+ 1.92428	+ 3.19583	+ 3.97820	+ 4.44161	+ 4.64306	+ 4.59477
$a^{-1} D_a^2 (a^3 b_{\frac{7}{2}}^{(2)})$	+ 2.49831	+ 3.59435	+ 4.26554	+ 4.64729	+ 4.78378	+ 4.68157
$a^{-2} D_a^2 (a^3 b_{\frac{7}{2}}^{(3)})$	+ 2.93764	+ 3.92067	+ 4.50996	+ 4.82668	+ 4.90902	+ 4.76000
$a^{-3} D_a^2 (a^3 b_{\frac{7}{2}}^{(4)})$	+ 3.29462	+ 4.19771	+ 4.72321	+ 4.98629	+ 5.02202	+ 4.83158
$a^{-4} D_a^2 (a^3 b_{\frac{7}{2}}^{(5)})$	+ 3.59564	+ 4.43881	+ 4.91270	+ 5.13025	+ 5.12511	+ 4.89746
$a^{-5} D_a^2 (a^3 b_{\frac{7}{2}}^{(6)})$	+ 3.85607	+ 4.65243	+ 5.08340	+ 5.26151	+ 5.21995	+ 4.95851
$a^{-6} D_a^2 (a^3 b_{\frac{7}{2}}^{(7)})$	+ 4.08560	+ 4.84433	+ 5.23889	+ 5.38226	+ 5.30784	+ 5.01541
$a^{-7} D_a^2 (a^3 b_{\frac{7}{2}}^{(8)})$	+ 4.29085	+ 5.01859	+ 5.38174	+ 5.49413	+ 5.38977	+ 5.06870
$a^{-8} D_a^2 (a^3 b_{\frac{7}{2}}^{(9)})$	+ 4.47649	+ 5.17825	+ 5.51395	+ 5.59842	+ 5.46653	+ 5.11883
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^{2} D_a^3 (a^3 b_{\frac{7}{2}}^{(0)})$	+ 1.07918	+ 3.16376	+ 4.36396	+ 5.13471	+ 5.60184	+ 5.81235
$a^{1} D_a^3 (a^3 b_{\frac{7}{2}}^{(1)})$	+ 2.22531	+ 3.80936	+ 4.80169	+ 5.44439	+ 5.82004	+ 5.95981
$D_a^3 (a^3 b_{\frac{7}{2}}^{(2)})$	+ 2.97543	+ 4.30703	+ 5.16056	+ 5.70758	+ 6.01016	+ 6.09072
$a^{-1} D_a^3 (a^3 b_{\frac{7}{2}}^{(3)})$	+ 3.53970	+ 4.71362	+ 5.46564	+ 5.93705	+ 6.17896	+ 6.20860
$a^{-2} D_a^3 (a^3 b_{\frac{7}{2}}^{(4)})$	+ 3.99359	+ 5.05805	+ 5.73151	+ 6.14084	+ 6.33098	+ 6.31594
$a^{-3} D_a^3 (a^3 b_{\frac{7}{2}}^{(5)})$	+ 4.37381	+ 5.35721	+ 5.96744	+ 6.32437	+ 6.46941	+ 6.41453
$a^{-4} D_a^3 (a^3 b_{\frac{7}{2}}^{(6)})$	+ 4.70117	+ 5.62183	+ 6.17972	+ 6.49149	+ 6.59659	+ 6.50576
$a^{-5} D_a^3 (a^3 b_{\frac{7}{2}}^{(7)})$	+ 4.98869	+ 5.85921	+ 6.37282	+ 6.64502	+ 6.71430	+ 6.59069
$a^{-6} D_a^3 (a^3 b_{\frac{7}{2}}^{(8)})$	+ 5.24509	+ 6.07452	+ 6.55005	+ 6.78709	+ 6.82391	+ 6.67016
$a^{-7} D_a^3 (a^3 b_{\frac{7}{2}}^{(9)})$	+ 5.47649	+ 6.27158	+ 6.71389	+ 6.91938	+ 6.92651	+ 6.74485
	β^2	β^4	β^6	β^8	β^{10}	β^{12}
$a^{3} D_a^4 (a^3 b_{\frac{7}{2}}^{(0)})$		+ 3.46835	+ 4.99258	+ 5.98087	+ 6.63239	+ 7.02076
$a^{2} D_a^4 (a^3 b_{\frac{7}{2}}^{(1)})$	+ 2.22531	+ 4.29396	+ 5.53465	+ 6.36691	+ 6.91236	+ 7.22103
$a^{1} D_a^4 (a^3 b_{\frac{7}{2}}^{(2)})$	+ 3.27646	+ 4.91909	+ 5.97750	+ 6.69448	+ 7.15585	+ 7.39836
$D_a^4 (a^3 b_{\frac{7}{2}}^{(3)})$	+ 4.01682	+ 5.42407	+ 6.35259	+ 6.97949	+ 7.37162	+ 7.55769
$a^{-1} D_a^4 (a^3 b_{\frac{7}{2}}^{(4)})$	+ 4.59564	+ 5.84851	+ 6.67837	+ 7.23208	+ 7.56558	+ 7.70248
$a^{-2} D_a^4 (a^3 b_{\frac{7}{2}}^{(5)})$	+ 5.07278	+ 6.21501	+ 6.96663	+ 7.45911	+ 7.74191	+ 7.83526
$a^{-3} D_a^4 (a^3 b_{\frac{7}{2}}^{(6)})$	+ 5.47932	+ 6.53776	+ 7.22532	+ 7.66545	+ 7.90367	+ 7.95795
$a^{-4} D_a^4 (a^3 b_{\frac{7}{2}}^{(7)})$	+ 5.83379	+ 6.82626	+ 7.46010	+ 7.85469	+ 8.05316	+ 8.07203
$a^{-5} D_a^4 (a^3 b_{\frac{7}{2}}^{(8)})$	+ 6.14818	+ 7.08719	+ 7.67514	+ 8.02954	+ 8.19219	+ 8.17866
$a^{-6} D_a^4 (a^3 b_{\frac{7}{2}}^{(9)})$	+ 6.43073	+ 7.32545	+ 7.87359	+ 8.19211	+ 8.32218	+ 8.27879

LOGARITHM OF THE COEFFICIENT OF

β^{14}	β^{16}	$a^2 \beta^{16}$	$a^4 \beta^{16}$	$a^6 \beta^{16}$	$a^8 \beta^{16}$		
+ 4.22580	+ 3.56237	+95.99069	+95.18526	+94.49969	+93.91169		
+ 4.27055	+ 3.56237	−95.69609	−94.95472	−94.31387	−93.76343		
+ 4.31111	+ 3.56237	+95.71542	+95.03060	+94.43933	+93.91855		
+ 4.34821	+ 3.56237	−96.26482	−95.65568	−95.13290	−94.67669		
+ 4.38238	+ 3.56237	−96.94587	−96.45404	−96.02107	−95.63357		
+ 4.41406	+ 3.56237	−97.59616	−97.13735	−96.73082	−96.37438		
+ 4.44359	+ 3.56237	−98.32017	−97.82241	−97.39462	−97.02015		
+ 4.47123	+ 3.56238	−98.92563	−98.40628	−97.96268	−97.57400		
+ 4.49722	+ 3.56241	−99.41580	−98.88930	−98.48891	−98.04441		
+ 4.52173	+ 3.56249	−99.82176	−99.29465	−98.84271	−98.44626		

β^{14}	β^{16}	β^{18}	$a^2 \beta^{18}$	$a^4 \beta^{18}$	$a^6 \beta^{18}$		
+ 5.77515	+ 5.46274	+ 4.76649	+96.28619	+95.30792	+94.47129		
+ 5.86512	+ 5.50438	+ 4.76649	−95.90741	−94.97035	−94.18752		
+ 5.94620	+ 5.54237	+ 4.76649	+95.84223	+94.98498	+94.16137		
+ 6.02005	+ 5.57731	+ 4.76649	−96.41437	−95.73504	−95.17231		
+ 6.08789	+ 5.60964	+ 4.76649	−97.32812	−96.80134	−96.33586		
+ 6.15065	+ 5.63974	+ 4.76649	−97.96623	−97.47901	−97.09694		
+ 6.20906	+ 5.66738	+ 4.76649	−98.29636	−97.85692	−97.48883		
+ 6.26370	+ 5.69431	+ 4.76649	+98.06045	−97.31513	−97.37783		
+ 6.31503	+ 5.71922	+ 4.76649	+99.40128	+98.74642	+98.13909		
+ 6.36343	+ 5.74278	+ 4.76648	+ 0.04746	+99.44177	+98.90555		

β^{14}	β^{16}	β^{18}	β^{20}	$a^2 \beta^{20}$	$a^4 \beta^{20}$		
+ 7.17436	+ 7.09361	+ 6.74649	+ 6.02176	+96.60917	+95.40262		
+ 7.31109	+ 7.17765	+ 6.78560	+ 6.02176	−96.06145	−94.88874		
+ 7.43387	+ 7.25399	+ 6.82148	+ 6.02176	+95.86747	−94.60746		
+ 7.54541	+ 7.32397	+ 6.85462	+ 6.02176	−96.67274	−96.00063		
+ 7.64765	+ 7.38858	+ 6.88541	+ 6.02176	−97.82438	−97.26427		
+ 7.74208	+ 7.44861	+ 6.91416	+ 6.02176	−98.46838	−98.10250		
+ 7.82984	+ 7.50468	+ 6.94118	+ 6.02176	−98.83446	−98.45857		
+ 7.91185	+ 7.55728	+ 6.96652	+ 6.02176	−99.13429	−98.70438		
+ 7.98882	+ 7.60683	+ 6.99050	+ 6.02176	−99.65689	−99.15978		
+ 8.06136	+ 7.65367	+ 7.01823	+ 6.02176	− 0.30513	−99.73884		